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COFFEES AND RUBBERS, OIL-PALMS, GROUND-NUTS, &c., IN EASTERN AND CENTRAL AFRICA.

(Extracts from the work of a recent Traveller.)

CONGO :—THE CATARACTS DISTRICT.

ALMOST everywhere in the districts of the Cataracts there are hills of some hundreds of yards of elevation, the soil of which is argillaceous and the vegetation such as I have just described. The rivers wind through narrow valleys, the alluvial soil of which is remarkably fertile. And here it is that the natives often establish their villages, and plant their oil-palms and the "safo" (*Sachylobus edulis*, now called *Canarium edula*,) which develope vigorously. In the neighbourhood, that is on the lower slopes of the hills, or in the valleys, they cultivate the manioc, the sweet-potato, and the earth-nut. There are also some villages in the Savannahs, even on the hill tops or on plateaux; one discovers them from a distance by their clusters of oil-palm and safo planted long ago by the side of dwellings.

There are also sandy districts, and they form extensive plains and are planted by the natives with ground-nuts. This plant gives abundant harvests, principally in the region of North Manyanga, of Banza Kasi and Banza Makuta. Formerly the natives of these regions used to bring their ground-nuts to Matadi, to the Dutch factory, to exchange for salt, which they sold in the interior.

In the wooded ravines other useful plants may be the objects of commercial transactions, such as the oil-palm for its oil and its seeds; the *Landolphia*, one kind of which, at least, gives a good India-rubber, the "panza" or *Pentaclethra*, that fine tree with large pods, containing large oily seeds. If these natural products are scarcely, if at all, objects of trade, we must attribute it to the sparseness of the population and the profits to be reaped from porterage. One must also remember the comparatively limited extent of the wooded areas. We are not in the primæval forest where trees and useful lianas abound.

When the railway will have put a stop to the porterage between Matadi and Leopoldville, the population will resume its ancient occupations. The ground-nut will again be more largely cultivated and the natural products of the country will be better utilized. Thanks to favourable tariffs, the railway will facilitate the export. I cannot say at all what will be *the* product of the future for this region.

There is still one cultivation which may acquire a certain importance in the districts of the Cataracts; it is that of the Coffee tree (of Liberia). Near Luvituku station, I saw a plantation consisting of about 500 plants 2 years old and 1,500 recently planted. They are shaded by oil-palms and panza and are coming on very well. One may therefore say that the same kind planted in the wooded valleys near the streams will give good results, in spite of the long dry season. I do not think that very large plantations would be possible; therefore the State will be wise not to undertake them. It would be better to induce the natives to cultivate small plots around their own villages, and to give them seed and even young plants. I consider it would be useless to try to cultivate coffee on the forestless hills, nor would I recommend it on the plateaux unless they attain an altitude of at least 2,000 to 2,500 ft. It is too dry during a great part of the year.

DISTRICT OF STANLEY POOL AND OF THE EASTERN KWANGO.

In these sandy regions, in open savannah, some interesting varieties of plants grow in abundance. They belong to the *Landolphia* group, India-rubber creepers

(lianas) have also some latex (lac), but instead of climbing, they run along underground, like long stems, and throw up aerial branches 20 to 60 centimetres high. I have distinguished five or six different varieties of this curious kind of *Landolphia*—true subterranean creepers—but only one of them has a great economic importance. The natives easily distinguish it from the others, although they are very much alike, and extract from it an India-rubber of pretty good quality, but capable of improvement by the elimination of the woody residue.

This India-rubber is actually produced in a part of the Stanley Pool district, and is seen in quantity in the markets. Last year the natives brought about 30 tons to Lukunga. But the greatest quantity of it undoubtedly comes from a district I have not visited eastern Kwango. According to what I am told by two functionaries, Messrs. Costermans and Deghilage, the India-rubber weed there covers vast sandy territories, and the natives work it on a large scale. Not loug ago the rubber from this region was exported to the Portuguese possessions of Angola, and was there the object of a considerable traffic.

Here are some figures that I owe to M. Deghilage, who has for a long time traversed the Western Kwango region:—"I have seen in the market of Kenghe Diadia 30 tons of rubber exposed for sale. This product can be bought at 80 centimes the kilogramme, and it is sold in Europe at 4 fr. or R4·50. Transport by caravans to Matadi costs 8 francs for 35 kilogrammes (78½ lb.) The same agent values the actual production of rubber of the Kwango district, at 500 tons a year, a quantity which might easily be doubled. Such a production in a generally poor, sandy soil is worthy of note, and warns us to beware of condemning any region from a superficial examination of its soil and vegetation.

What I have said of the production of palm oil, of ronza seed and of rubber may be applied to the neighbouring district. I hope even more from the extension of the cultivation of the ground nut in the sandy plains of the Stanley Pool and the Kwango districts. It is already much cultivated and might be much more so.

As for the cultivation of Coffee, I should be much less affirmative. I do not doubt that one might also cultivate it in the wooded fertile valleys, but I think it is an error to wish to make large plantations as they tried to do near the pool, at Kinchassa and especially at Galiema. In these two localities, 4 or 5 years ago, many coffee trees were planted in a soil essentially sandy, with soil to a depth of 40 or 50 centimetres (18 or 20 inches) rarely more. I will give you word for word what I noted on the spot on the 10th of last March:—"Beside the 350 coffee trees 4 to 10 years of age and the two Cacao trees 6 or 7 years old at Leopoldville, they planted two years ago at Galiema nearly 10,000 coffee and 1,600 cacao trees. Let us look at the Cacao. A first plantation almost equally as important has failed, a victim to the insects that devour the cacao leaves touched by the drought. What will become of their successors. They have had to be protected by thick shade and nevertheless many of them have perished. In fact, Cacao must not be thought of for large plantations in the district.

Liberian coffee suits better, but we must not found large hopes even on this. Not only that neither soil nor climate is of the best, but also that labour is very short near the pool. In fact, it is very difficult to provide the labourers now with sufficient food, for want of native cultivation in the surrounding regions. And any fresh extension in coffee cultivation would render the victualling of the blacks still more precarious.

In short, under these conditions, one cannot believe that the opening of large plantations would be profitable. Rather should one abandon these efforts in order to concentrate every effort on the equatorial zone.

DISTRICT OF THE LAKE LEOPOLD II.

At the village of Quèbo plantains are cultivated by the natives and papaw trees are fertile and vigorous; giant grasses abound where the soil is turned up; the forest is nowhere more brilliant than in the neighbourhood of Malepie. I have there seen a stem of India-rubber creeper 10 centimetres in diameter, bearing several transverse incisions, a proof that the natives know and practise the good way of extracting the rubber.

Certainly neither the soil of Malepie nor that of Quebo can be considered as very favourable for the cultivation of coffee, It is too sandy, and the six months of drought would make the process of watering too difficult. But *tobacco* seems to offer a more hopeful cultivation, especially if the analysis of the soil shows a sufficiency of potash. It is the same with the earth-nut, the cultivation of which should be left entirely to the natives. The oil-palm is not very abundant. On the other hand there are many rubber creepers in the forest and along the banks. Rubber constitutes the most important product of this district, and will for a long time remain so, especially if, as Messrs. Jacques, Delcommune and Gillain affirm, the eastern region is entirely covered with forests. According to information I have received, the region ought to give 300 to 400 tons of rubber for annum. The specimens I have seen were of very good quality and are worth 6 to 7 francs in Europe per kilogramme; they had been bought at about 20 centimes (2*d.*)

I would also note the large quantity of copal that exists in the Lake region, and which the natives collect at the foot of the trees along the banks. The value of gum copal is variable, and I have not yet had my specimens examined. But, when the railway is finished, it will be possible to export this to Europe in large quantities. I cannot give the cost of handling or collecting it, as that was only attempted two days before I left.

DISTRICTS OF THE KASSAI AND THE LUALABA.

Further on rise little hillocks well wooded in which oil-palms and *Landolphia* abound. Here begins the variety of rubber known as Kassai which is so much sought after in Europe on account of its purity and excellence. The forest here also extends towards the south to the Djuma or Kuilu which traverses a forest said to contain much rubber. Further on the country resumes the appearance of the caravan route, but the elevations are all covered with forests. You find there all the types of equatorial vegetation, including oil-palms, rubber creepers, rattans, some *Raphia*, trees of coloured wood in great variety. The soil is no longer clayey, but purely sandy and brown from the earth which is more than three feet deep. There are many sites there on the hilly parts suited for agricultural undertakings. Several factories (?agencies) exist in these latitudes. Their principal resource is India-rubber, which they buy at 35 to 40 centimes the kilogramme*; labourers can be produced for 10 centimes a day. Up to Luebo, on the Lulua, the aspect is the same and the panorama is marvellous, so various is the vegetation.

Luebo is surrounded by fine forests and is an important market for the red rubber of Kassai (worth 7 to 7½ fr. the kilo.) The natives harvest it by incision and prepare balls strung together in chaplets; or else the latex is warmed and made into bricks 20 centimetres long and 4 to 6 broad, and of a dark colour. The rubber is bought at 35 to 37 centimes the kilogramme in exchange for cloth and sometimes for cowries; allowing for the cost of transport (60 to 100%) the kilog. costs at most 75 centimes (7½). Rubber exists in abundance in the forests and seems to be methodically harvested by incision. From information furnished to me, I conclude that from 500 to 700 tons a year of the best quality could easily be harvested, provided goods in exchange were always forthcoming), and this only after the railway is finished.

*kilogramme=2 1·5 lbs.

The population is relatively large and is distinguished by remarkable aptitude for work and for trade.

In the forests oil palms and panza are abundant. There is also a kind of palm, the *Raphia*, very widel spread in the basin of the Congo, and which will be dealt with advantageously when the railway is made. Its leaves furnish fibrous thongs, used there in weaving little mats (*mandiba*), and they are used by horticulturists in Europe for ligatures. At present Madagascar furnishes the fibres known as *Raphia*, and it is brought to the French ports; the price of it varies from frs. 1·50 to 2 fr. the kilog. On the Congo one could buy them anywhere for a few centimes.

Beyond the Lusambo, on the shores of the Sankuru grows wild a very interesting kind of *Coffee-tree*, which seem to me new. It exists also, I am told, in abundance on the left bank of the Lomani, west of the Gandu. It is a small tree 3 to 5 yards high with branches spreading out often over the streams, with fine leaves larger than those of the Liberian coffee, and small flowers, smaller than those of the Arabian variety. The berries are of medium size, the seeds rather small and regular and have a very delicate aroma. For several days I drank coffee of this kind that had been gathered towards Gandu and it was excellent.

M. Middegh assures me that this coffee abounds in the woods on the left bank of the Lomani, and is even cultivated in certain villages. This variety has been cultivated, first by the Arabs, and then by M. Gillain at Lusambo station, where there were about 500 trees at the time of my visit. In the same plantation there were some Liberian coffee trees planted at the same time, but which had not developed so well as this wild kind. I attribute this to the nature of the soil of Lusambo: a siliceous earth, rich in vegetable soil for 20 or 30 centimetres, down. In such land one must give up Liberian in favour of the new kind, accustomed to grow on the sandy soils so common in the basins of the upper Kassai, the Sankuru and the Lomani. This coffee seems to me to have a great future before it, especially after the southern portion of the great forests is opened up to cultivation.

We are already acquainted with several of the useful plants of the great African forests. First comes the *Landolphia*, or india-rubber creeper; there are certainly several varieties, the one that seems to me to predominate has stalks that attain perhaps to a diameter of 20 centimetres, large leaves and medium-sized fruit. The latex gives about half its volume of rubber. It is this extraordinary richness which has enabled M. Rue, a State functionary, to succeed in a preparation of rubber which had been vainly attempted in the Congo. A company had been trying to prepare large lumps or masses, but without success, until then. M. Rue's method is as follows:—The rubber gathered from the stems is brought to a place in the forest where it is poured into wooden or zinc receptacles. Boxes that had been used in packing up cartridges have been used: they are 50 to 70 centimetres long, 25 wide and 7 to 10 centimetres deep. Left for some hours, at night, the latex coagulates; it does so more rapidly and regularly if it is slightly warmed. It is necessary to knead the coagulated latex to draw out the water or otherwise make cavities in the mass. That is the worst defect in the rubber thus prepared. It would be better not to make such large cakes, and to have them only 8 to 10 centimes thick. For it is indispensable to dispel most of the imbibed water by exposing the blocks for some months in airy sheds. The proximity of river banks, especially if they are subject to frequent fogs, is bad. Mr. Rue's method could not be adopted with latex poor in rubber, such as is collected by the lake Leopold, and especially in the districts of the equator. In 1895 the Arab zone produced nearly 300 tons of rubber. The production could easily have risen to 1,000 tons, if the Europeans had had goods in sufficient quantity in exchange.

In an island of the Lualaba, above Wabundu, grows, in a wild state, a kind of Coffee much like the Arabian. It is also found opposite Coquilhatville and on the banks of the Uelle and the Ubangi. It forms a shrub 6 to 18 feet high, with narrow leaves, small elongated beans, rather small berries of rather irregular shape owing to there being often three berries in a bean. The colour of the berry is grey, and there is so little aroma that many berries are required to produce a fair cup of coffee.

At Wanie Kukula, I saw in the forests another kind of wild Coffee whose reputation has no longer to be made: Liberian Coffee living in the forest under the shade of great trees. There are trees in flower 30 to 40 feet high, the trunks of which measured 15 to 25 centimetres in diameter 3 feet from the ground. They bore branches only at the summit of the stems, which is explained by the struggle for light of the denizens of the forest. The seeds are a little smaller than those of the cultivated Liberian trees. In every point the wild and the cultivated Liberian resemble one another, and in a plantation of 5 to 6 hundred trees near by, it was not possible to distinguish them. The trees belonged to some Arab chiefs to whom the Commandant Lothaire had advised the cultivation of wild coffee and had given seeds of the cultivated variety.

We must note then the existence, in their wild state, of three different kinds of coffee in the Congo State, and two of these have a great economic importance. For if equatorial Africa is the home of these precious plants, there is no doubt that they may be cultivated there with success. To satisfy oneself, it is sufficient to visit the plantations of Wabundu, and especially those of Stanley Falls. At the latter station, 400 trees were planted in 1890 on the recent deposits of the left bank of the river. They are very fine and were covered with berries when I passed; one of these trees was photographed after it had been stripped. The fruits weighed 21 kilog. (47 lbs.) which corresponds to about 3 kilo. of coffee (7 lb.) After the Arab campaign, coffee planting was resumed vigorously under the direction of M. Rom. Last year there were more than 5,500 plants over a year old and ¾ yds. high and growing vigorously.

From observations made at the station since 1893, it is found that it rains all the year, and that there are only 2 months (February and July, and sometimes also January) in which rain is less abundant, but there is never more than an interval of 10 or 12 days. At Romee, great fertility was attributed to some sandy land formerly cultivated by the Arabs. It was really owing to the burning of forest vegetation there; in a year's time some hundreds of coffee bushes expressed this fact most evidently, and they were removed to the opposite or right bank of the river, formed of alluvium and clay, where they flourish.

The Forest Region of the Arab zone is certainly the richest region of the Independent State for its forests, its rubber, its suitability for coffee, and above all for the cheapness of labour. The wages are from 1d. to 2d. per day, and the Arab rule has taught the people to work.

A PRELIMINARY NOTE ON THE ENZYME IN TEA.

(*Continued from page 584.*)

ENZYME AND LIGHT.

According to Reynolds Green there is some relation between the quantity of enzyme in growing leaves and light. He states (page 404) that bright sunlight was found to have a powerfully destructive influence on the enzyme, and that other observers had noticed that there was more enzyme in leaves gathered early in the morning than late in the evening. Presuming the enzyme in tea has some effect on quality or flavour, it would, according to the above observations,

be advisable to pluck as early as possible in the day, and some planters have stated that teas made from leaves plucked early in the morning are better than others. This would also have a considerable bearing on the beneficial effect or othewise, of shade on the quality of tea grown beneath it. To investigate this question, we examined leaf plucked at 6 a. m., 2 p.m. and 6 p.m., (and occasionally at 10 p. m.) for several days under conditions of severe drought and excessive moisture.

The result of these microscopical investigations show that the enzyme (or its zymogen) is present in abundance at all hours and under all conditions, so that it would be difficult to ascribe improved quality, if any, in early plucked leaf to a particular abnndance of enzyme.

Since an enzyme is present in all tea leaf under all conditions, the next point to determine is its function in the plant, and its action during the manufacture of tea.

As regards the function of the enzyme in the living tea plant, it is difficult to make any definite statements at present since there are so few optically visible store-products in the leaf requiring its action to render them soluble. This point is further investigated, and we can only state that the activity of the enzyme is apparently connected with the glucosidal products in the leaf and possibly with the proteids.

The enzyme has been isolated, by one of us, and its action determined on a solution of tannin, prepared from tea, with the result of a browning of the liquid and the formation of a small proportion of sugar. We would not, however, place too much reliance on this reaction nntil confirmed by further tests, as the tannin of tea is so prone to undergo change, that the chemical processes necessary for its isolation might induce a somewhat similar change. The best practical method of proving the effect of the enzyme would be to isolate a large quantity of it from a highly flavoured tea, and to add this to a low country tea during manufactnre and so determine any enhancement of flavonr.

METHOD OF EXTRACTION.

The simplest method is to bruise the withered leaf in contact with hide powder or sheet gelatine for some hours, then to remove the gelatine, which has now become very tough and leathery, and to again bruise the leaf with a small quantity of water at about 80° F. The damp mass is then subjected to high pressure to express all the juices, which are then filtered as rapidly as possible, and precipitated with several volumes of alcohol. After some hours the bulk of the solution is poured off from the flocculent precipitate which has subsided, and this is again treated with water to dissolve the enzyme, the solution filtered and again precipitated with several volumes of strong alcohol. The precipitated enzyme can be re-subjected to this treatment to further purify it, and finally collected and dried at the ordinary temperature to a whitish powder, or it can be collected and disolve in water to a nearly oolourless solution.

Both the powder and solution prepared in this manner give a deep blue reaction with gum guiacum, and as other products which are known to also give a blue reaction with this test have been removed by the method of preparation, except perhaps traces of proteid, we may conclude that the reaction in the original leaf is almost certainly due to the presence of the enzyme.

Tannin, gallic acid, caffeine and other products in tea have been tested separately, and found not to any re-action with the resin.

If the enzyme has anything to do with *flavour* in tea, the questions to be solved are :—

1st. Is it acting during the growth of the leaf?

2nd Does it only act after development from an nert form (zymogen) during the withering process,

3rd. Does it act during or after rolling, since then the contents of the cells are more or less expressed and mixed with one another.

1st. The enzyme is no donbt active in the leaf during the life of the plant at all elevations, and the fact that the flavour of tea does not appear until we get into higher elevations would tend to show that its aotivity had little, if anything, to do with the flavour.

The maximum activity of other enzymes is associated with a definite range of temparature frequently above that prevailing even in the low country of Ceylon; hence we might infer that the activity of the enzyme in tea would be greatest in the hot low country, and yet we know that these teas have much less flavour than those grown in the high country

2nd. The presence of a zymogen or mother enzyme was indicated in many of our experiments. Freshly cnt sections of leaf frequently gave no reaction with the gum guiacum test, nntil after freqnent moistenings and exposure to air. This could only be due to the zymogen being rapidly convertod by oxidation into the active enzyme. Again withered leaf invariably gave a quicker and more intense reaction than the fresh leaf, which would also indicate a similar change. Again sections freqnently give a more intense blue reaction after treatment with hydrogen peroxide, which may also be due to the rapid oxidation of the zymogen into the active enzyme, or possibly to a direct action between the two reagents themselves.

The Chinese method of withering tea leaf may also be dependent for its sncess partly on the fact that tho frequent throwing in the air and gentle patting with the hands allows an oxidation of the zymogen into the enzyme.

Assuming that the abundance of enzyme is desirable, it would seem worth onr while to employ a system of withering which wonld permit of a degree of oxidation sufficient to convert the whole of the zymogen into the active form.

Experiments in this direction, and also on the effect of light in the development of the active enzyme in the leaf are now being made.

3rd. In the rolling process one might expect that very large percentage of the cells would be ruptnred, and their contents mixed with one another and exposed to the air. It is, however, snrprising that only a very small percentage of cells are really broken, and the material which is expressed has mainly been driven through the cell walls.

Examination of rolled leaf revealed abont the same amount of enzyme as in the withered leaf, and only differed from it in being more diffuse. In order to get the zymogen or enzyme more exposed to the air, high pressure during rolling would be snggested, as this would no doubt insnre the rupturing of more cells, and the more intimate mixing of cell contents. In practice, however, it has been freqnently found that while great pressure increases the strength of the tea, the flavour becomes more or less masked or diminished.

Several tests have proved that the enzyme is entirely destroyed by sufficient heat in the ordinary process of drying but its action is probably increased to a marked extent for the first few minutes in the drying machine, as it has often been demonstrated, that the actual temporatnre of the leaf while wet is usually 80° to 100° F. below the temparature of the air in the machine, which would represent a temperature in which the majority of enzymes are most active.

The enzyme or its action is also entircly destroyed by steam, as is shown in the manufactnre of green tea, and there are one or two points in this connection which probably indicate the true action of the enzyme in the mannfacture of black tea.

The first of these is the fact that tea leaf *thoroughly wilted* by steam will not acquire the brown coppery

colour of the nfused leaf of black tea, although treated in exactly the same manner, with the exception of the preliminary heating to a temparatnre of boiling water.

This would indicate that the presence of the active enzyme was necessary for the proper oxidation of the constituents of the sap or leaf to produce the *colour* of black tea.

From the higher percentage of nnchanged tannin in green tea it would appear that the enzyme has a considerable influence on this product.

Another point is in connection with the *flavour*. If there is any flavour in green tea it cannot be dne to the action of the enzyme during manufacture, as this is completely destroyed in the preliminary process of steaming. Some planters state that the up-country green teas have no more flavour than the low-country teas of the same class, and if this is correct, it would appear that the enzyme has some effect in producing flavour, as its destruction has apparently prevented the development of the flavour that we know is characteristic of the black teas from up-country leaf. If it is a fact that leaf from an up-country estate has less flavour when manufactured into green instead of black tea, the diminution of flavour might be due to the destruction of the enzyme, or, as is more likely, to the loss of essential oil during the steaming process.

In the investigation which we are continuing, there are several points of interest which may be mentioned here. The most important is that of determining the nature of the reactions and the products, when the several constituents of the leaf are brought into contact with the pure enzyme at different temparatnres. This is, of course, first being carried out in the laboratory, and if possible and deemed advantageous, will be applied in the factory.

The reaction between the enzyme and the tannin, essential oil, cellulose and protied, is being determined separately for each of these bodies, together with that between the enzyme and tea leaf *en masse*. It is obvious that the products of these reactions are many and not always easy to recognize, but if we can prove that any of them will impart a desirable flavour to tea, a great point will have been gained, though it will remain to be seen whether it can be used commercially.

The work must be continued in the factory at low and high elevations, and this we are prepared to do at the earliest opportunity.

WOODINESS OF THE PASSION FRUIT.

A. DESPEISSIS.

A disease hitherto unknown in Western Australia was, last season, first observed on some locally grown passion vines. That disease has of late years played havoc with the passion fruit plantations around Sydney, and our ports have this season been made the dumping ground of several important consignments of diseased passion.

The figures illustrating this "woodiness" show the disease in a mild form.

They are taken from a Paper on the subject, prepared by Dr. N. A. Cobb, Government Vegetable Pathologist of New South Wales.

The disease is still an obscure one. First observed around Parramatta some seven or eight years ago, it has since spread to the whole surrounding County of Cumberland, where its progress is more or less erratic.

It affects most vineyards in the locality named, and at the same time spares a few in the centre of infection.

Even in a diseased vineyard some plants escape; the disease is less common on moist, free soil, suited to passion fruit, than elsewhere.

SYMPTOMS.

A "woody" passions vine is stunted in growth, with short distorted canes, of pale-yellowish leaves instead of a dark-green colour. The stocks are sometimes enlarged and knobby; much of the fruit drops early the rest hang on, become distorted, crack on the surface, and when cut open are either empty and show a considerable thickness of the rind, or what there is of the edible pulp is thin, has a "flat" taste, with a colour different from that found in healthy fruit. The seeds do not ripen properly, and remain light and sometimes glassy instead of turning black.

CAUSES OF THE DISEASE.

A disease passion vine often shows amongst woody fruits, some which have every appearance of soundness, and yet seeds from these apparently sound fruit contain in them germs of the disease which, when shown, they transmit to the resulting plant.

Exposed situations and frosts are also known to have a prejudicial influence on passion vines showing a tendency to woodiness, but, above all, exhaustion of the soil seems to accompany in most cases the woody disease.

The passion fruit plant is most exacting on the store of plant food in the ground. By reason of its rank growth and its prodigious bearing capacity (it bears two to three crops of fruit each year) it soon exhausts the soil of nourishment as well as of moisture. It has been noticed that, where manured, the vines are less affected by the disease than are vines growing alongside which have been stinted of fertilisers.

Dr. Cobb has observed on the yellow spotted leaves of diseased plants, as well as on the spotted bark of dead branches, a specific fungus which he believes to be associated with woodiness of the passion fruit.

REMEDIES.

The passion vine is a gross feeder. According to Mr. F. B. Guthrie's computation, each passion vine with fruit removes on an average annually from the soils 6½oz. nitrogen, 1½oz. phosphoric acid, and 2¾ oz. potash, so that a vineyard planted with 300 (12ft, x 12ft,) passion vines to the acre would remove: nitrogen, 117 lbs, ; phosphoric acid, 28 lbs ; potash, 52 lbs.

Knowing that sulphate of ammonia of commerce contains about 20 per cent. of nitrogen, superphosphate about 14 per cent. phosphoric acid, and sulphate of potash of commerce 50 per cent. of potash, we arrive at the following mixture, in order to restore to the land all the elements of plant food extracted by pasion vines, and by a crop of passion fruit, viz.:—

Sulphate of Ammonia	.. 600 lb.
Superphosphate of Lime ..	... 200 „
Sulphate of Potash, ...	.. 100 „

Such a mixture, applied at the rate of 3 lb., per vine, would cost 4d. per vine or a little over. It should be applied a year or so after the vines are planted.

Besides a liberal application of chemical fertilisers, it has been suggested that, considering that the woody disease is propagated by means of diseased seeds, and, moreover, that in all attacked vineyards there are some vines which always look healthy and appear to be proof against the blight, cuttings be taken from such vines and planted with a view to obtaining passion vines endowed with the immunity of the parent.—*Journal of the Department of Agriculture of Western Australia.*

ALEXANDRIA BANANA DISEASE.

PRELIMINARY REPORT BY DR. LOOS AND G. P. FOADEN.

A few days ago we stated that the report of Dr. Loos and Mr. Foaden on the disease, which has caused such widespread destruction among the Alexandria bananas, had appeared and been issued by the Municipality. The disease, according to the report, is caused by a worm of the same species as that which caused great

havo from 1885 to 1888 in Brazil completely destroying the plantations in large districts in that country. The report draws the following analogy between this disease and the present out-break at Alexandria:—

"The history of the former disease is very interesting and instrnctive inasmuch as the disease could be traced back to 1869, that is to say to years before the ont-break became really serions. Nothing was known of the pest nor were any attempts made to cope with it until the year 1887, when a surface of about 715,000 feddans was infected and the cnltivation of coffee rendered impossible. The similarity to the present case is striking. It has been known for some 3 or 4 years that a banana disease existed in the district aronnd Alexandria. The disease was first located in a small area, then at some little distance from the first observed area. and finally is now spread in the whole neighbourhood, it not only infecting plantations but has fonnd its way into private gardens."

We need not reproduce the first part of the report, which is purely technical, but the conclusion, dealing with the methods of stamping out the disease, deserves to be reproduced in full:—

"The most important question to be considered, is how to cope with the disease, in other words, how to prevent the propagation of the worms. This can only be arrivel at through an exact knowledge of the life histories of the pests. In order to arrive at this, an examination at one season of the year will not suffice, and with the advent of warmer weather further observations may be made. It has been seen that all the different species pass a certain period of their life history outside the plants themselves, that is to say, in the soil, this being a common feature in the history of all parasitic animals since it is the only means by which they can spread. The time, therefore, in which to institute an attack is when the majority are fonnd in the soil, for any attempt to reach the pest when within the plant must be doomed to failure, as it is then in perfect security. In countries where there are well-defined seasons with great difference between them it is more easy to ascertain exactly the different stages than is the case with such a climate as that at Alexandria where probably development goes on steadily, that is to say, the few worms are always present in the soil. It is, on the other hand, also very likely that their numbers become considerably increased at certain periods in connection with the subseqnent generations. Any remedy to be applied wonld therefore have its maximum effect only if applied dnring those periods. This matter can, however, only be definitely decided when the life histories of the species have been followed throughout. Experiments could then be conducted as to the most suitable means to employ. In coping with nematodes attacking the beet crop in Germany a method was successfnlly adopted which may be mentioned here. Nematodes are found in, one might say, almost every plant in small numbers. Practically all nematodes living as parasites on plants are not exclusively parasitic on one individual species, for if they find the necessary favourable conditions for existence they will att ck another host, just as a human being or an animal can carry injury to health, and only show signs of snffering when the number increases, so within certain limits can plants withstand nematodes, and only show signs of disease when their numbers become excessive. To combat the pest in the sugar beet plantations, other plants which were suitable as hosts were used to attract the pest. The seed was sown early in spring, some weeks before the beet were planted.

"The larvæ of the nematode hibernate freely in the soil and attacked the newly-sown plants which were subseqnently removed and destroyed. There were thus removed from the soil vast numbers of the pest which would otherwise have attacked the beet. This did not result naturally in a complete clearance of the beet but the numbers remaining, the beet were enable to resist. The adoption of this method in the case of bananas would present certain modifications but some thing might be done in this direction and then by providing the plant with suitable conditions for recovery such as good cultivation and an application of suitable manure they may recover.

"The idea has been expressed that the disease is one of recent introduction, but this does not seem probable. Species of the genus heterodera were found by Dr. Loos in a garden at Alexandria some years since, and these were similar to the heterodera of the bananas. It is probable that they have now found a most suitable host in bananas and have consequently rapidly increased in numbers. They have probably been living in banana plantations for some considerable time and the result of years of increase is now very apparent.

"Experiments in the direction indicated should be attempted; first to ascertain plants most snitable, the times at which they should be shown, and the time at which they should be removed. The latter information could of course be derived by a study of the complete life history of the pests.

"Various remedies have been suggested in the direction of applying to the soil some substance which wonld prove harmful to the pests. We think the most suitable substance to try at first is ordinary lime. This substance is most commonly applied as a remedy for insect pests either alone or mixed with common soot. Lime from gas works might also be employed. A certain quantity well incorporated with the soil aronnd the plants might have a most beneficial effect, and wonld probably benefit the crop at the same time. It is at any rate a practical and inexpensive method. Much has also been said concerning an application of nitrates and many misleading and inaccurate figures published regarding the percentage of nitrates present in the soil. We do not deny that an application of nitrogenous manure may have beneficial effects, not as a direct remedy against the pests but merely as enconraging and stimulating the plant and helping it, provided the numbers of nematodes are not too excessive to outgrow and overcome attack.

"Experiments might also show if the worms in question or similar ones are capable of attacking other and more important crops in the country. Wheat and onions are known to snffer occasionally by the attacks of nematode worms belonging to the genus Zylenchus. The Zylenchns of the onions causes great damage in Enrope and is found occasionally in the crop of Upper Egypt."—*Egyptian Gazette.*

CAMPHOR.

(*Continued from page, 587.*)

PREPARATION OF THE CAMPHOR.

As soon as the plants have reached a fair size and formed stout woody stems below—say in three years or less in very good situations—they may be clipped. The simplest method will perhaps be to use hedge shears, placing a long basket below the hedge to catch the clippings. Only the leaves and young twigs are required; woody twigs yield little or no camphor.

In Japan, where, however, they only nse the woods of full-grown trees as a sonrce of camphor, the chip of wood are distilled in a primitive-looking bnt effective still, with bamboo tubes (these have the advantage that they can afterwards be split to remove any camphor from them) and a wooden condenser with water running over its lid. In Ceylon probably the best method will be to fix np a small still of any good pattern with a glass condenser and plentifnl water supply, working it by means of steam from the factory boiler. As the distillation is a somewhat nncertain operation, especially to the beginner, and as it is probable that more efficient methods will be discovered, the details of the principal experiments tried are given below. Material for these experi-

ments was obtained from the gardens at Peradeniya (1,600 feet), Hakgala (5,600 feet), and Anuradhapura, (300 feet).

CAMPHOR DISTILLATION.

The first distillations were from 112 lb. of prunings received from Hakgala on the 28th June, 1900. These were conducted in a large cask fitted with a metal cover leading to a metal condenser, which was cooled by a constant flow of water. Distillation was effected by means of steam from a boiler passing into the lower part of the cask below a perforated iron plate. The prunings were chopped up into fragments about 1 inch long, covered with water, the top, connected with the condenser, luted on, and steam turned on to gradually bring the water to the boil.

A strong pungent smell of camphor and eucalyptus came off as soon as distillation commenced, which persisted for some time even when the distillate was cooled to 50° F., a temperature below that which could be obtained practically. The loss was minimized by bringing the water to the boil very slowly, and only admitting just sufficient steam to keep it at the boiling temperature. It was found that the metal cover to the cask retained a good proportion of the camphor, but it was not so pure as when condensed in a wooden box similar to that in use in China and Japan. The purest camphor was obtained when the distillate was made to pass through a long glass tube surrounded with a jacket of cold (running) water, the crystals being deposited when the temperature of the glass did not exceed 50° C. or 122° F., a temperature that could easily be maintained in a condensing apparatus up-country at all times of the year. In the low-country a more rapid flow of condensing water and a proportionately longer condensing apparatus would be required to obtain the same results, as the water is much warmer and the steam also is at a higher temperature.

In all the experiments the camphor had almost entirely distilled over during the first three hours, as several distillations conducted for twelve hours and longer resulted in no better yield, and the smell of the camphor under these circumstances was contaminated with that of decomposition products from the nitrogenous matter, &c., in the leaves and twigs. Three distillations could be made in the same apparatus during the day.

The amount of steam required for the distillation even of large quantities would be nominal, and would hardly be felt in an ordinary boiler working in a tea factory.

YIELD OF CAMPHOR.

The first distillation from part of the prunings obtained from Hakgala in June, 1900, only yielded ·35 per cent., but this was increased to ·62 per cent. by better regulation of the steam pressure and the condensing water. The camphor had a slight smell of eucalyptus, and was not so strong as ordinary camphor. The leaves were quite fresh when distilled.

Separate distillations were again made in August with fresh leaves and twigs, and the green branches of about half inch to 1 inch thick, the former yielded ·85 per cent. camphor, but the latter a mere trace, both of camphor and oil.

7th September, 1900.—Three distillations of camphor leaves from Peradeniya were made in the usual manner the yield from the first being 1·10 per cent. of camphor and camphor oil. In the second distilation, when the leaves had partly dried, 1·06 per cent. of camphor and oil was obtained, calculated on the fresh leaves. In the third distillation the leaves had undergone partial decomposition, the result of becoming heated to a temperature of 106° F. The yied in this case was ·68 per cent. camphor and ·38 per cent. of oil, so that it would appear advisable to distil the leaves as fresh as possible, as the oil is less valuable than the camphor.

9th October 1900.—A sample of young camphor flush weighing 11½ lb, plucked from two trees in Hakgala, one 8 feet in diameter and 12 feet high, yielding 8 lb. and the other 5 feet in diameter and 7 feet high, yielding 3½ lb. This was carefully distilled in a copper retort over a lamp, and the vapour condensed in a glass vessel. In the first four hours ·63 per cent of pure camphor was obtained, which smelled only of pure camphor; on further distillation ·08 per cent. more camphor was obtained, which did not smell quite so pure. Heating by the direct flame beneath the vessel appears to take longer in removing all the camphor than driving it over with steam under slight pressure.

24th October, 1900.—A distillation of camphor clippings from Hakgala yielded ·77 per cent. camphor and ·27 per cent. oil.

30th October 1900.—A distillation of 12 lb. of camphor flush was made in a copper vessel with a glass condenser, yielded ·69 per cent. camphor and ·34 per cent. camphor oil. The trees were in active growth when this flush was plucked.

9th January, 1901.—A camphor tree that had become slightly cankered was received from Hakgala in separate parcels of leaves, branches, stem, and roots. Several distillations of the leaves and twigs were made, both in the fresh state and when air-dried, some of them being continued for twelve hours. The yield of camphor and oil varied somewhat, but appeared to depend on the proportion of leaves to twigs, the latter containing much less than the former. A glass condenser was employed for all these distillations, the camphor and oil being obtained quite pure.

The first experiment yielded ·875 per cent. camphor and ·986 per cent. oil, a far larger proportion of oil than in any previous distillation of similar leaf.

A second distillation, which was continued at a low temperature for eleven hours, yielded 1·08 per cent. pure camphor and 0·32 per cent oil.

Five other distillations at intervals of some days with the air-dried leaves gave the following yields :—

No. 1.—2·310 per cent. camphor and 1·14 per cent. oil equal to 1 02 per cent. on fresh leaf.

No. 2.—2·149 per cent. camphor and oil, equal to ·98 per cent. on fresh leaf.

No. 3.—2·425 per cent. camphor and traces of oil equal to 1·05 per cent. on fresh leaf.

No. 4.—2·380 per cent· camphor and traces of oil equal to 1·01 per cent. on fresh leaf.

No. 5.—2·080 per cent. camphor and traces of oil equal to ·96 per cent. on fresh leaf.

From these figures it will be seen that air-drying the leaf before distillation does not cause any appreciable loss of camphor, though a certain amount of oil disappears, either by volatilization or oxidation. The camphor obtained from the air-dried leaf also had a somewhat purer smell than that from the fresh leaf though this latter was easily rendered pure by re-distillation with staem.

Three distillations were made of the branches and stem of the camphor tree, but no appreciable quantity of camphor was obtained from either, nor did the bark of the stem appear to contain more than traces. The roots, however, contained an oil, 5 lb. of roots yielding 1·22 per cent. This oil was located mainly in the bark and in a thin layer of wood beneath it. It had only a slight smell of camphor, and more resembled a mixture of aniseed and peppermint.

On the 7th August, 1901, 5 lb. of young flush was received from Hakgala in a slightly heated condition. It was at once put into a copper vessel with fifteen pints of water, and a glass dome luted on, which was connected with a glass condenser. The water was heated slowly from below, and a thermometer placed so as to register the temperature of the Vapour 2 inches above the water and camphor leaves.

At 50° C. (122° F.) crystal of camphor condensed on the glass dome, which at 90° C. 194° F. were carried back into the water by the condensed steam. At 100° C. the steam and camphor vapour was passing rapidly into the glass condenser, while the leaves were covered with oily drops of camphor and oil.

Distillation at 100° C. was continued for two hours, when 4½ litres (7·93 pints) of water containing camphor and oil had collected in the condenser. This was then passed through a wet paper filter to separate the camphor and oil from the water, 24·53 grams of the mixture being obtained, equal to 1·10 per cent. The oil was separated from the camphor as much as possible, the yield of each on the original flush being ·755 per cent. pure camphor and ·345 per cent. camphor oil. Another distillation was made in the same way of 10 lb. of coppice shoots one year old from a tree that had been cut down. The yield of camphor from this was very small, only ·192 per cent. and shows that the first year's growth from a tree cut down to the ground is practically valueless, but it is probable that young flush from such coppiced trees would increase in the camphor contents during the next and succeeding years.

Further distillations were also made of the entire prunings weighing 50 lb. of a five year and nine months old tree of average growth, the leaves 27 lb. and branches 23 lb. being distilled separately, the former yielding ·767 per cent. of pure camphor and some oil, the latter only traces of oil, showing that the whole of the camphor is practically in the leaves and not in the young wood. The reason of this should be investigated, as it is from *old wood* that the bulk of the camphor of commerce is obtained.

CHARACTERS.

The camphor obtained from all the above experiments has the usual crystalline form, and is perfectly colourless unless condensed in an iron vessel, when it is tinged with red from the oxidized iron. It floats on water, in which it is almost insoluble, and small fragments rotate rapidly when floated on this liquid. It burns with a yellow smoky flame, leaving no residue, and volatilizes readily at the ordinary temperature. It is easily soluble in alcohol, either, and chloroform, and is precipitated from the former, in white flocculent masses, when the solution is poured into water. It sublimes readily, and has an odour of camphor, but not so powerful as ordinary camphor from old wood. Its specific gravity is ·987; it melts at 175° C., 347° F.; and boils at 205° C. 400° F. It dissolves readily in nitric acid, with some development of heat, and immediate separation of the solution into two layers. the upper of a red colour and the lower pale yellow or colourless. The addition of water precipitates the camphor as a white mass from the upper layer of the solution apparently unchanged.

SUBLIMATION EXPERIMENTS.

These were conducted at varying temperatures and under different conditions in order to try and obtain the translucent state common to commercial camphor. The most successful method was by mixing the crude camphor with slaked lime in the proportion of 40 to 1, and subjecting this in a closed vessel to a low heat for twelve hours, the heat being gradually increased up the sides of the vessel in order to drive all the camphor into the upper portion. Copper vessels are the best for the purpose, as glass is liable to fracture from condensed moisture running down to the heated sides.

Before sublimation can be effected it is essential that all the camphor oil should be expressed from the camphor. The camphor when first distilled appears to be practically free from oil, but after standing some days oil gradually separates and sinks to the bottom of the mass of crystals, and this appears to continue for months. Filtration with the aid of a vacuum effects a partial separation but in practice on a large scale it would be best effected by means of a centrifugal machine similar to that employed for the separation of crystalline sugar from molasses.

OIL

The oil obtained with the camphor from the leaves is of a clear yellow colour, having a specific gravity at 80° F. of ·9662. It contains a certain amount of camphor in solution, which can be separated to some extent by cooling to 10° C. It would therefore be advisable to cool the mixture of camphor and oil, as much as possible, before submitting it to centrifugal expression.

The root oil, of which 1·22 per cent. was obtained from the air-dried roots was almost colourless and had no smell of camphor. It consisted of a mixture of two oils, one lighter and one heavier than water, the specific gravity of the mixed oils being 1·058 at 80° F

YIELD AND PROSPECTS.

The figures about given show that the yield varies a good deal, but that on the average about ·75 to 1 per cent. of camphor may be expected from the young leaves and twigs, as well as a small quantity of camphor oil, which also has a market value. Samples of camphor mixed with the oil were valued lately at R126 per cwt. If we assume that clippings will yield about 1 per cent. of camphor and oil worth R1 per lb. we should be well within the mark. The cost of obtaining this should be about R53 per acre made up as follows:—

	Rs.	c.
Pruning 1,210 trees and carrying to factory	37	0
Distilling, fuel, packing &c.	16	0
	53	0

I.e., camphor can be put on the market as cheaply as tea per pound if the yield be at the rate of 177 lb. per acre (cost of tea being estimated at 30 cents). Now 177 lb. will be yielded by 17,700 lb. of clippings. In the case of bushes 6 feet apart this means 14I lb, per bush per annum, or about seven times the weight of flush obtained from a prosperous tea bush. On the other hand, the bushes are only half as many to the acre, and the plucking is much closer, so that this estimate is not unreasonable, and the product is more valuable than tea. It seems not unreasonable to expect that where a bush, with 36 square feet of space to grow in, yields 12 to 15 lb. of clippings a year, the cultivation will prove remunerative—not abonanza, but yielding a fair profit. In the Hakgala Gardens this yield is exceeded, so far as rough experiments show.

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PLANTING NOTES.

RHEA FIBRE.—Mr. Jefferies, of the Nurseries, Oxford, sends us illustrations of the growing plant and of the fibre it produces. The value of the fibre of the Boehmeria nivea has long been appreciated, but some difficulties still exist in the cleaning the fibre and divesting it of resin.—*Gardeners' Chronicle.*

SYDNEY BOTANIC GARDENS.—During the month of March the garden was visited by immense numbers of flying-foxes. There must have been many thousands of them, and some of the large trees were quite black with them. Several local sportsmen shot large numbers, and the destructive animals were all killed or flew away in about a week from the first appearance of the swarm. It is many years since the gardens were visited by a plague of these animals.—Ibid.

THE AGE OF TREES.—The estimation of the age of trees by means of the number of rings visible in the wood is well known to be subject to many exceptions. In a recent number of the *Revue Horticole* it is pointed out that by pinching, or pruning or grafting, a second layer of wood may be formed in one year in a shoot. The explanation given by M. GUIGUARD is that the pinching or other operation brings about a state of rest, less sap is directed to the wound. But when the adjacent buds being to grow, the afflux of sap is increased, and a fresh zone of wood is the result.—Ibid.

ORANGE CULTURE, PICKING AND PACKING IN JAMAICA.

Being Paper read by Hon. Dr. Johnston, at the First Orange Conference held under the auspices of the Board of Agriculture at the Collegiate Hall, Kingston, on Wednesday, 30th October, 1901.

In approaching the subject of orange culture, picking and packing for shipment, it is with no desire on my part to pose as an authority on the question, or to pit my opinion against those of the experienced planter to whom a knowledge of fruit growing and handling rightly belongs, but, having lived for many years in one of the finest fruit-producing parishes in the Island, and being impressed with the importance of the industry, and the necessity for its development being placed on a sound and permanent basis, I have been led for some time past to take a personal interest in the matter, and to do what little I can to secure this much-to-be-desired end. For while we may all be agreed that sugar must ever remain the staple product of the colony, (hear, hear,) and that in its revival, by means of reasonable preferential concessions on the part of the Imperial Government, and the establishment of Central Factories, lies the only hope for Jamaica's future prosperity, we must not lose sight of the fact that hundreds of our people depend on the frequent visits of the fruit steamers to our shores, whereby to realise a little ready money to meet their most pressing needs and the call of the tax-collector.

Hitherto, our fruit shipping experiences have been confined chiefly to the comparatively near markets of the United States and Canada. The short sea voyage and the expeditious transit of our oranges to these countries have in some measure obviated the necessity for very special care in handling and packing, although we have seen, more than once, hundreds of barrels of Jamaica oranges in an unsaleable condition on the wharves of New York through careless packing, while everywhere we heard grocers complaining that, even if our fruit arrived sound, the unattractive appearance of our packages and the slovenly method of putting up the fruit, adopted by us, precluded the possibility of our oranges ever taking rank with the Florida and Californian products until we were persuaded to bestow more time and care in preparing them for the market.

The Problem.—But now, gentlemen, we are face to face with the problem of how to pick and pack our oranges so as to carry successfully more than three times the distance to the States and a voyage of twelve to fourteen days instead of four or five; for the markets of the Mother Country are now open to us by the inauguration of the Direct Line of specially fitted steamers, affording facilities for shipping fruit to England never offered to us before, while we have practically the field to ourselves until much later. Could we but place our fruit in good condition at Covent Garden now, high prices could be assured, for our Jamaica oranges for quality have no peer, and the fault is our own that their reputation in England is not better than it is. In confirmation of this statement, permit me to quote from a letter received by last mail from a large fruit-dealer in Liverpool. He writes:—"We have been badly in need of oranges for the last three months, and will be for some time to come. Barrels from Jamaica turn out very wasty, but we may hope for better packages in future. With you, I sincerely trust, the prosperity of Jamaica will, in near future, greatly improve, but I also know this improvement can only be accomplished by diligent and persevering energy on both sides of the Atlantic." The difficulties are many, but they are not insurmountable, and as the Italian, Sicilian and Spanish orange packers contend successfully with a long sea voyage and extremes of temperature, so can we; and it might be well for us to review briefly the methods, adopted by them, which have resulted in bringing vast wealth to Messina and Palermo, while whole cities have sprung up on the East coast of Spain during the past thirty or forty years, as the result of an orange industry conducted on business principles. Under order from Mr. A. L. Jones, it was my privilege to spend some three weeks in Spain, my instructions being to visit Italy, Sicily, Algiers or wherever else I would be likely to gain information that might be of value to the orange shippers of Jamaica. On reaching Valencia, I learned that the season had practically closed further East, so determined to confine my investigations to the region within a couple of hundred miles of Valencia, where three or four weeks still remained before the crop would be finished. My first visit was to the orange groves, or orchards, of Burianna, accompanied by an interpreter and guide provided by Messrs. Reis Bros., a firm of high standing and doing a larger business, probably, in oranges than any other house in Spain, and were therefore in a position to afford me special facilities in my hunt for knowledge.

In the Field,—On entering the orange field, I was struck by the amount of labour put into the land; every inch is ploughed by a crude, primitive and ancient-looking wooden implement, the share alone being tipped with iron which turns up a very shallow furrow effectively, however, stirring up the soil and keeping down the weeds, although the work could be much more speedily and effectively accomplished by one of our modern American cultivators. Not in every plantation in Jamaica can this suggestion be adopted, as much of our oranges grow in the pimento walks, and pasture lands, and the idea, therefore, would apply to only such fields as are entirely given over to orange culture. One thing, however, applies to orange-growing any and everywhere,—if the planter would improve the character and condition of his trees, and the quality of his fruit—he must at least fork up the soil within a radius of six feet round each tree; a trench 12 inches wide, six inches deep, at a distance varying according to the size of the tree and the reach of the limbs, filled with manure, is a very good half-way measure. I also observed that a circular hole is dug round the roots of each tree, the earth being drawn back some two feet, forming a basin-shaped hollow, exposing the roots some 18 or 20 inches from the trunk. The reason given for this is, first, that insect borers, etc., are more liable to attack the roots near the trunk of the tree, and the exposure of at this point leaves them no shelter, and their operations are more rapidly detected; secondly, it was found in the early experience of Spanish orange growers that a gum disease, in the form of a gummy or resinous deposit, accumulated and formed between the earth and the air on the tree which ultimately caused the bark to rot, with the result that 60 per cent. of the trees died in the 4th and 5th year of their growth, while in other cases portions of the trees would wither away. Now,

the gum drops down and disappears in the soil, while the farmer can very readily observe any evidence of decay in the roots, so as to remove the affected parts. This clearing of the roots has effectively remedied the evil, and the exposed roots rapidly accommodate themselves to the atmosphere, while the improvement in the health of the trees has been most apparent. Within the last few years it has been found necessary to apply to the roots of every thirty trees some 70 kilos, or about 100 lbs. of artificial manure annually, mostly superphosphates, but very little natural manure being available. This, unfortunately, has been found to cause a deterioration in the flavour of the fruit, an evil that must increase as the time goes on, for another decade at least. The species of trees found there are by no means as large as those of Jamaica, but this may be accounted for, in some measure, by the vigilant pruning and the removal of both tops and branches which are likely to interfere with the development of the fruit.

PLUCKING.—As to the method of picking the oranges. In no instance are they plucked, but with a short pair of clippers, resembling wire cutting pliers, they are snipped from the stem, three or four oranges being received by the left hand at a time. Before placing the oranges in the basket the portion of stem remaining on the fruit is cut close; boys with baskets slung from their shoulders being employed to climb for the fruit beyond the reach of the men. The fruit is in no case thrown into heaps as with us, but when twenty or thirty baskets are filled the cart comes along and carries them off to the packing houses; the first layer of baskets being placed in a swinging shelf underneath the cart, the second on the bottom, and the third on a layer of boards forming an upper tier, so that there is little or no pressure put on the oranges up to this stage of handling. I would remark that mules and horses are utilised for reaching portions of the orchard inaccessible to carts. They carry about six or eight baskets on wooden crates slung across the backs of the animals, and on arrival at the packing house the fruit is emptied on the floor to the depth of not more than twelve to eighteen inches; sand and straw being freely distributed to receive them. A typical packing house has a floor space of about 70 ft. by 120 ft., evade the necessity for shelves in laying out the fruit, the shelf system being deprecated by the packers as causing unnecessary handling of the fruit, and being more inaccessible to the sorter. There are no sizing machines in use, as they save nothing in time and labour, each orange requiring to be individually culled with or without them; but then the Spanish women are experts at this business. The buildings are divided into four distinct departments, viz:—sorting, wrapping, box-making, and packing. The sorting is the most important portion of the work and is generally accomplished by elderly women of long experience. The oranges are sorted, first, that damaged or imperfect fruit, or fruit with a blemish, such as a worm hole, a depression from contact with a branch while growing, or for any other reason that the sorters may consider them as unfit for shipment, may be laid aside. Under this head 20 per cent. of the harvest is rejected and finds its way to local markets.

CLASSIFICATION.—Much care and study has been bestowed upon the classification of the oranges; for we find that they are packed into boxes, of some seven different sizes. Blood oranges, for example, are packed into cases of 200 each. Then under the heading of "410," which are the largest oranges, we have four sizes: "Ordinary," "Large," "Extra Large," and "Extra, Extra Large"; these names being printed upon the respective boxes, and indicate a variation of three or four inches in the size of the box. Cases containing 714 are usually of one size only, as also are boxes of 1064, which contain the smallest oranges of the crop. Each box is divided into three compartments by two partitions, the centre space being sorter than the outer two. It is thought that these boxes would be much too large for our fruit. This may be so, although the reasons given are not very convincing so far. There is a possibility of going too far in the opposite direction, and certainly the boxes that prevail here at present do not permit of as ready success of air through the fruit, seeing that the openings are only at the corners, the sides, top and bottom generally being each of one piece, while the Spanish box is made up of narrow laths forming practically a crate, but experience will shortly demonstrate to us whether ours or the Spanish box will best serve the purpose. In any case the barrel must go. The variety of classes accounts for the large number of baskets required in a well-equipped packing house, as separate baskets are required to receive from the hands of the sorter the particular size of fruit intended for the above grades. It will thus be seen that the basket plays an important part in the orange business, and facilitates the handling of the fruit to such an extent that I cannot understand why it has never been adopted in Jamaica. They are of two sorts—shallow and wide, so that the orange may not have too far to drop during the operations of sorting and wrapping, and deep and narrow, so that they can be easily carried upon the shoulders. I shipped a sample order of 200 in the hope that our planters might see the wisdom of adopting them. They are woven from Esparto grass and with ordinary use will last many seasons. To minimise still further the possibility of the fruit being bruised or injured the packers of Valencia line them throughout with sacking.

WRAPPING.—Between the sorters and the packers are the wrappers sitting in groups around heaps of the fruit, each heap of a certain class, and being supplied by the men who take them from the sorters, here again they are subject to further inspection, and blemished fruit which may have escaped the scrutiny of the sorters is thrown aside. I have here some samples of the paper used for wrapping, please observe that each bear the stamp or trade-mark of the packer, a guarantee of the quality of his fruit, and he is proud enough of his brand to stand by the consequence attached to carelessness on the part of his employees, No oranges are shipped from Spain which do not bear on each end of the case a stencilled trade-mark or brand of the packer, also number of oranges contained in the box. The brand also indicates whether the fruit is of good quality, or finest or superior quality. The wrapper has a pile of cut papers in her lap, and dexterously placing an orange at one end rolls it from her, gathering the ends in a tight twist at each side, which holds the paper in place prettily and perfectly, An ordinary hand can do 20 to 25 per minute. The wrapping paper is of a very fine, soft, silky quality, made in Spain. The cost there for enough to wrap an average of 240 boxes is 80 pesetas, or about £2 7s 6d according to rate of exchange; stamping, 20 pesetas or 11s. 7d. The wrapped fruit is then carried to that portion of the house where they are packed in their respective boxes according to size and class,

PACKING.—And now as to packing. This is done by girls, two of them putting up a box of 714 in 15 minutes and a box of 420 in 10 minutes. I must confess to being somewhat surprised when the carpenter came along to put on the lids; he first tacked the three laths at one end, then, putting his knee on each lath in turn applied his whole weight so as to press the oranges firmly into the box. When the box of oranges is packed ready for the lid it appears to be much too full, the top layer being nearly half their thickness above the level of the box-edge. I questioned the propriety of applying so much force to bring them down. The explanation given that it did no damage, as it was absolutely necessary that allowance be made for shrinkage, that the fruit received equal pressure all through the box, and that while a bounce to an orange would injure it, no harm came by even, steady pressure, which had the result of simply flattening four surfaces, but was not sufficient to cause confusion of the internal portion of the orange; unless by accident or careless packing one or two should be caught between the lid and the edge of the box. When the carpenter has finished nailing on the cover small boys come along with strips of raw hide and nail them around each end in place of hoops; finally the box is handed over to men who dexterously and firmly bind each round and round with some ten or twelve yards of cord plaited from Esparto grass. The boxes are then carried to the Grao or beach where they are loaded on to surf boats and conveyed to the steamers lying at anchor in the roads some half a mile away. I am in possession of every detail regarding cost of materials, also length and breadth of the various boxes, time required for their construction, etc., which will be supplied on application.

FOR JAMAICA.—The foregoing is a brief synopsis of the methods adopted by packers in the plains of Castellon; but there are other points in connection with the handling of fruit in Spain that must not be lost sight of, and I fear that unless we in Jamaica are prepared to follow in some measure these or similar methods in handling our fruit, we can never hope to make satisfactory shipments of oranges to England. For instance, when the season begins with us, we find scores of irresponsible people—in the country parts, at least—renting sheds and vacant houses, at the same time intimating their intentions of buying oranges from the surrounding districts; the people commence to collect fruit, plucking it roughly from the trees, throwing it into heaps some three or four feet high, until a cart comes along, the sides have been raised by the addition of rough sticks tied together at the corners; into this the oranges are thrown several feet deep and carted to the aforesaid packing sheds, where inexperienced women are employed wrapping in rough straw paper, and packing the oranges unsorted into barrels or boxes, rejecting only such fruit as gives unmistakeable evidence of being hopelessly damaged; but such packers have no means of learning what treatment the fruit has received, not only in the fields and carts, but by the numerous small settlers who bring in their quota in rough hampers on mule or donkey backs for sale. When they arrive at the wharf the barrels are generally emptied in the shipper's shed and again packed, but very much after the same unsystematic method. This would never be tolerated in such places as Burrianna, for in no instance will the packers accept or purchase fruit which has not been picked by their employees. In the foregoing description I refer chiefly to what I have seen personally on the Northside of the Island. I acknowledge that in the neighbourhood of Kingston and Port Antonio, planters may have within the last year or two adopted much more improved methods of putting up their fruit; but even they, I feel sure, will be glad to take advantage of the suggestions of the Spanish packer, from knowledge acquired after many years in the trade. In every instance the farmer sells his crop on the tree, either by weight or by sight,—if by sight, all that may be blown down subsequently is included in the contract; if by weight, only fruit picked direct from the tree is counted. In the former case the price paid is less, but the risk of loss lies with the packer, and *vice versa*. The cost of the fruit in May was from \$5 to \$7 per thousand, but earlier in the season they could be purchased for \$2·50 to \$3, an orange is an orange in Spain, and every one counts, not three for one as with us. I consider the fruit grown in the regions round Valencia to be very much inferior in every respect to the Jamaica product. It has a very thick rind, although it is said that this applies only to those of the so-called second flowering. Be this as it may, most of those that I saw were coarse in appearance, the surface being rougher than even our Seville orange, while the sweetness and juiciness can in no way compare, the seeds larger, much more core, and that very fibrous. The plains of Castellon have a perfect network of canals, a legacy of the magnificent engineering of the Moors. Connected with every 10 or 20 acres is an ancient water-wheel some 10 to 12 feet in diameter, for raising the water to the level of the land for the purpose of irrigation. The horses or mules that turn the wheel are blind-folded so that they may be kept in ignorance of the whereabout of the driver boy, and so that he dare not stop in his monotonous round until the work is done for fear of the whip, which may be a mile away.

IRRIGATION.—In discussing with packers the merits of the fruit of the various districts as to their carrying and keeping qualities, I was informed that excessive irrigation ruined the carrying qualities of the fruit; that while a limited amount of water increased the rind so making the oranges somewhat together and less likely to be bruised in packing, we find that in the Bibara the best examples of the effect of water on the orange; there are two classes of orchard there, one, the "huerto" or gardens, mostly made up land in terraces, where the water let on moistens the soil, but does not remain pools for any length of time, quickly disappearing through the very porous condition of the land. The oranges produced thus are of a superior quality, and although the trees are planted some 20 feet apart, they yield a larger crop to the acre than those of the Plana, which are planted a little more than half that distance from each other. These oranges keep and carry well, while in the plains of the same district the "huertas" or fields are of a stiffer soil, the water lies longer and disappears slowly, producing a coarse orange which carries badly. Again, the increasing use of artificial manure is an important factor in the deterioration of the fruit in this direction as well as affecting the flavour, natural fertilizer being very much less so, but for reasons which the foregoing but partially explains, oranges from the high elevation keeps much better than those from the plains. Within the last few years a number of bitter orange trees have been introduced from Seville, as experience has proven that sweet oranges budded on to these possess excellent keeping qualities. This fact

argues well for the system now so much in vogue in Jamaica of budding sweet oranges on the shoots o Seville orange stumps or on young Seville seedlings. Oranges grown in districts subject to frequent fogs or mist carry worst of all; and in any case should on no account be picked while wet. In the early part of the season it is recommended that the fruit lie for several days in the shed before wrapping so as to permit of its being somewhat softened, the better to adapt itself to the packing process. As the season advances however, this is unnecessary, and the fruit should be put up within, at most, three days of housing.

But I am convinced, from all I have seen and learned of the fruit trade here, that with a few modifications and adaptations to local conditions, Spanish methods may with equal success be adopted in Jamaica. It may be objected that we have a much more difficult problem to solve than the Valencians, as the latter have but to provide for a seven or eight days' voyage, as against twelve from Jamaica. This argument, however,, is ill-founded, as many of the packers employed in Palermo, Messina, and other parts of Sicily and Southern Italy, hail from Burrianna, where they employ exactly the same methods they have been accustomed to in Spain, with the one exception that the boxes are somewhat smaller, and they have to provide for a voyage of from fourteen to sixteen days in a temperature very often in excess of anything we have to contend with in the West Indies. Such facts should be most encouraging to us in our prospective orange business with England; and while in the streets of London I observed in several fruiterers' windows, Valencian and Sicilian oranges marked 2s. 6d. per dozen, alongside of which were Jamaicans at 1s. With improved handling, sorting and packing, I am sanguine enough to expect to see the tables turned within a couple of years, and the Jamaican oranges taking first rank amongst citrus fruits, entirely upon its own merits in the English market.

Before I close, permit me to suggest that a committee be appointed at once for the drafting of a bill, to be introduced at the next sitting of the Legislative Council, dealing with the question of packers' license (hear, hear) and the inauguration of a system of registered trade marks or brands (applause) that shall not only make it possible to lay the responsibility of badly-handled fruit on the proper shoulders, but will be the means of protecting the packer, who is ambitious enough to aim that his particular trade mark should represent a quality of orange second to none in the markets of Great Britain.—*Journal of the Jamaica Agricultural Society.*

USE OF THE ELECTRIC LIGHT AND OF ETHER IN FORCING PLANTS.

Practical gardeners have rarely the opportunity of making scientific experiments, and commercial men, in spite of the all-importance of the subject to them, are even less inclined to step beyond the path marked out by routine, unless some immediate benefit is likely to be forthcoming. Experiment stations, then, become more and more necessary, and they should be supported by those who will ultimately benefit from them. Such a one we might have at Chiswick. We do not think there would be any insurmountable difficulty as to funds, or as to a scientific director competent to devise, carry out, and publish the results of experiments likely to benefit practical horticulture. How is it, for instance, that no one in this country has taken up the question of the use of the electric light, or for the matter of that, of artificial light of any kind, for forcing purposes in our dull winters? The evidence obtained some twenty years ago by the late Sir William Siemens was simply astounding (see *Gard. Chron.*, 1880, April 3, p. 432). Mr. Buchanan, the gardener, now in Queensland, was allowed a free hand, and the results in the case of forced Strawberries, Wheat, and other crops were almost beyond belief, more especially as regards the hastening of the ripening process.

Of course this was an experiment on a limited scale, and the question of expense did not enter into consideration. The houses were there, the apparatus was installed, the extra cost of utilising the light was not material. The results were, however, so extraordinary, that it is a matter for astonishment that no one in this country has continued the experiments, and shown what modifications are necessary to make the use of the electric light, or the incandescent gas light, in forcing a commercial success. The subject is not even mentioned in the recently published gardening manuals to which we have referred. In France more has been done, and still more in America, where the use of the electric light has been proved under certain circumstances commercially advantageous in the case of Lettuce-growing. Prof. Bailey, in the *Cyclopædia of American Horticulture*, sums up the results that have been obtanied in the United States by saying that "the application of the electric light to the growing of plants is a special matter to be used when the cilmate is abnormally cloudy, or when it is desired to hasten the maturity of crops for a particular date." Now these are just the very conditions which obtain in an ordinary British winter. Prof. Bailey goes on to say that, "Only in the case of Lettuce has it been proved to be of general commercial importance, and even with Lettuce it is doubtful if it will pay for its cost in climates which are abundantly sunny."

Professor Bailey writes, under the sunny skies of the States, of the electric light only, and from a commercial standpoint alone. The conditions of British horticulture differ widely, and in many places gas would be cheaper and more efficient than the electric light.

Another means of facilitating forcing operations has lately been made known by one of the professors at a Danish Agricultural School, and which consists in subjecting the plants to the fumes of ether. The plants so exposed shed their leaves, as though they had been subjected to frost. The best results with Lilacs are obtained in late summer. The ether then stops vegetative growth, and a moderate temperature being supplied, the flower-buds quickly expand, so that Lilacs may be had in bloom in the first half of September. M. Frans Ledien, of the Dresden Botanic Garden, has been experimenting in the same direction, and the results he has obtained are summarised in recent numbers of *Le Jardin*, from which we glean the following particulars:—

For early forcing, says Herr LEDIEN, the action of ether is so important that none who practice forcing on a large scale can afford to dispense with it. Flowers obtained by early forcing naturally command a high price. It should further be considered that fuel is saved by this method (whether the forcing be at a high or a low temperature,) and that this economy more than balances the cost of etherisation. The cost per plant works out at rather more than one penny (12 cents).

1. The varieties of Lilac usually forced in Germany: Marie Legraye, Charles X., and Léon Simon, were in full bloom twenty eight days after having been brought into the house; Marie Legraye was even earlier in flowering.

2. Various flowering shrubs may be bloomed in much less time than by the usual process. Plants of the same variety not etherised have not bloomed, or have bloomed badly, in the comparative trails, or perhaps some opened their flowers in eight or ten days (according to the variety) after those that were treated with the ether.

3. Etherised plants can be forced at a lower temperature than that which is essential for the blooming of those not etherised.

Besides Lilacs, Herr Ledien also made experiments with Viburnum tomentosum *syn.* plicatum, Azalea mollis, Prunus triloba, Deutzia gracilis, Lily of the Valley, Hyacinth, Rose, and cut branches of ornamental spring-flowering shrubs. Azalea mollis and Viburnum did well; Prunus triloba was less amenable to the action of the ether; Deutzia gracilis failed altogether. Lilies of the Valley etherised and placed in heat on November 21 flowered in the proportion of 40 per cent. on the twenty-first day, while of those not etherised only 2 per cent. flowered, and these in a temperature of 23° C. For late forcing of Lily of the Valley the ether had but little effect, so that it seemed better in that case to keep the plants in the refrigerating apparatus or in cool chambers. For Roses the results were not altogether decisive, although a very marked advance was reported.

Branches of Azalea mollis cut and etherised expanded their flowers in twenty-three days, while the buds on branches not treated did not open until twelve days after. The greatest success was with Lilacs, Viburnum, and Azaleas. Viburnum plicatum, though slow to bloom, placed in heat on December 2, was in full bloom about December 14; while those plants not etherised yielded only poor flowers at a much latter date.

Azalea mollis submitted to ether on Nov. 26, and brought indoors on the 28th, was covered with flowers on December 20, although the check plants only bloomed partially in the beginning of January. The more nearly the normal season of the flowering of the shrubs is approached, the less vigorous is the effect of the ether. The value of etherisation, then, is for early forcing in November and December, when the flowering can be hastened by some two or three weeks.

Plants lifted from the borders without preliminary attention during the summer, flower as normally as if forced in January or February. This, it must be confessed, is an immense advance in the forcing industry.

The application of the treatment is not without certain inconveniences and difficulties at the commencement. The vapour of the ether is inflammable, so that no light must be brought into places where plants are etheised until the vapour has been thoroughly dispersed by ventilation; no fire or light must be allowed anywhere in the neighbourhood of the ether.

There is still some difficulty in administering the ether to ensure perfect volatilisation. The plants should remain plunged in the vapour for a certain time, about forty-eight hours, and this must be in an absolutely air-tight place, to prevent the escape of the vapour. The larger the area, the more precautions should be taken both to concentrate the vapour during the period of etherisation, and to ensure its rapid dispersal after the operation.

For forcing on a large scale, cemented buildings with a door and several ventilators, the interstices of which are hermetically sealed so as to prevent the escape of any ether, are most convenient. The interior arrangement should be such that every corner can be filled with plants, so as not to waste the ether unnecessarily.—*Gardeners' Chronicle.*

COFFEE CULTIVATION IN BRAZIL.

Brazil is pre-eminently a coffee-producing country, the tree being introduced into Para, from Cayenne, in 1727. While coffee can be grown in nearly all parts of the country, its cultivation in the present century has been limited to a comparatively small zone, comprising the four States of Espirito Santo, Minas Geraes, Rio de Janeiro, and Sao Paulo. It is produced in other States, but in small quantities. The soil of Rio de Janeiro being already somewhat exhausted, Sao Paulo is in reality the great centre of production of the plant. Brazil furnishes more than 60 per cent. of the world's consumption of coffee, and it is claimed by some that the percentage is as high as 70 per cent. In 1890, Brazil produced 490,000 tons; Central America and Mexico, 80,000; Java and Sumatra, 60,000; Haiti and Santo Domingo, 43,000, Cuba and Porto Rico, 35,000; India, 30,000; Africa, 20,000; and other places, 100,000 tons. In 1898, the production of Brazil was estimated at 1,533,840,000 pounds, or 11,620,000 bags out of a total production of 1,960,619,288 pounds for all America, while Asia and Africa produced only 145,464,000 pounds or 1,102, 000 bags. According to a recent report of the Bureau of the American Republics, coffee trees prefer wild, uncultivated lands, hill sides, or elevated lands. These are cleared of their trees and brushwood, and plants one year old are planted, averaging 400 to the acre. The plant does not begin to produce until it is 4 years old, its maximum production being reached between the ages of 6 and 20 years, after which it diminishes in productiveness. When the trees reach the age of 35 or 40 years it is generally necessary to renew the plantation. The coffee tree attains an average height of 10 feet, and its head a diameter of 5 feet. It blooms and yields a crop twice a year, but the most important is that beginning in April or May, and continuing to November. The only fertilisers used are the leaves of the coffee tree, the shells of the berry, and weeds, as it is necessary to keep the plantation free from all extraneous matter. The tree should be protected from cold winds. Its worst enemy is frost, which sometimes causes the tree to cease producing for a number of years, occasioning greater loss than the parasitical diseases with which it is afflicted. The berry resembles very closely the cranberry, and contains two grains, with their flattened sides towards each other. Each of the two is covered with a closely adhering membrane, called *pergaminho*, and outside of this is a thicker and more loosely fitting coat called *casquinha*. The two grains, with their coverings, are contained in a tough shell, called *casca*, and this is surrounded by a white pulp and outer red skin, thus forming the berry. To prepare the coffee for market, all these coverings are removed. The outer pulp is removed, after masceration in water, by a machine called *despolpador*, A trough, lined with cement, is placed on a hill-side above the mill, and through it a stream of water is kept running. Into this the coffee berries are thrown, and are carried down the stream into a large vat. In this vat the heavier berries sink to the bottom, whence they are drawn off through a pipe to the *despolpador*. This machine removes the pulp, the berries passing with the water to another vat beyond, where the pulp is thoroughly washed off and carried away with the water, while the coffee grains sink to the bottom, and thence, passing to a strainer, the water is all drained off, leaving them ready for the process of drying. Two methods of drying are in use in Brazil; the old process, which consists in spreading the grains on a cement covered pavement, called *terreiro*, where they are allowed to dry in the sun. For this about two months are necessary, and the grains have to be raked over and turned during the day, and gathered into piles, and covered at night, or whenever a shower comes. The more modern and satisfactory process of drying by steam is employed on many of the larger plantations. By this process,

the drying, which by the old method requires about sixty days, is accomplished in a few hours, with a vast economy of labour. Under this system, drying is done in large shallow pans of zinc, heated by steam coils beneath, more uniformly, and with no danger of injury from sudden rain. The coffee, after drying, is still enclosed in the inner and outer skins, which have been rendered more brittle by the drying. The machinery necessary for the removal of this is somewhat complicated and expensive. The coffee is brought from the drying house, and placed in bins, whence it is carried to a ventilator, where it is cleared of rubbish and dirt by sifting and fanning. From the ventilator, the coffee is carried to the sheller (*descascador*). The grains and broken husks are carried by a pipe to a second ventilator, where the latter are sifted out, and fanned away, and the former are carried by an elevator to the separator. This is composed of hollow copper cylinders, pierced with holes of different shapes and sizes. These cylinders are kept constantly revolving, and the coffee grains passing through the holes, fall into separate bins, being thus assorted according to their size and shape. The coffee thus mechanically classified goes into the markets of the world, where it is sold, the small, round grains as "Mocha," the large, flat grains as "Java." A small portion of the *pergaminho* which still remains, is removed by the *brunidor* polisher) by trituration and fanning. Finally, after passing through all this series of machines, the coffee is carefully picked over by hand, and is ready to be put into bags. As an indication of the extent to which coffee cultivation is pursued in Brazil, the Secretary of Agriculture of the Sao Paulo Government may be quoted as follows:—"There are in Sao Paulo 15,075 plantations, of which 11,234 have upwards of 50,000 trees; 1,844 possess from 50,000 to 100 000; 999 between 100,000 and 200,000; 597 from 200,000 to 500,000 trees. On these platations, 1,703 machines are to be found for cleaning coffee, 1,243 of which are worked by steam, and 460 by water. In Minas Geraes it is said that there are 2,739 coffee plantations, 1,234 with less than 50,000 coffee trees each, 844 with over 100,000 trees each, and 64 with over 500,000 trees each. Of these plantations 500 use water power and 1,243 steam." Brazilian planters complain that only their inferior grades of coffee are known abroad in their true character, their better qualities being sold under the disguise of such titles as "Mocha," "Java," "Martinique," &c. It is said, even, that this spurious trade is strengthened by the shipments of Brazilian coffee from various parts of Europe to Egypt, and thence to Arabia, *viâ* Aden and Jeddah, &c., so that it may there be packed in Mocha fashion, after which it is shipped to Syria or other places, or returned to Egypt as genuine Mocha. The total production of coffee in Brazil, which amounted to 4,622,000 bags in 1899-90, rose in 1894-95 to 6,977,000 bags, and in 1899-1900 to 11,000,000 bags, the bag containing about 132 lbs.—*Journal of the Society of Arts.*

COCONUTS IN SOUTH AMERICA.

An interesting report regarding the production of coconuts in South America was recently issued by the Consular Department at the city of Washington, U.S.A. The countries dealt with were Brazil, Colombia, Ecuador, The Guianas, Peru, and Venezuela. And the report was based on information received through the consuls at the places mentioned.

COCONUTS IN BRAZIL.

Although a great many coconuts are raised in the Bahia consular district of Brazil, it does not produce one-third as many as the Pernambuco district, which is particularly rich in coconut palms, on account of its peculiar coast formation.

In the Bahia district, the trees are found wherever there is a settlement, but grow chiefly on the strip of low-lying sandy land along the coast. This land is the most desirable for coconut plantations, as the proximity of the salt water makes the trees more productive and the fruit a better quality. Occasionally a piece of land is found at a considerable distance from the coast upon which the palms will flourish, but this is unusual. Single trees are scattered here and there inland; but these are raised with considerable difficulty, produce only an indifferent fruit, and die at an early age.

The number of trees and their productiveness increases as the Pernambuco district is neared and decreases in the same ratio southward. The largest plantations are a short distance north of Bahia City, where there is one that has more than 7,000 and several which have as many as 5,000 trees each; but no particular efforts at cultivation are made. The coconuts have simply been planted and allowed to come up and produce what they will, the fruit being gathered from time to time. The owners are usually engaged in other businesses; the proprietor of the large plantation above mentioned, for instance, is a local merchant.

It is impossible to get any information as to the extent of the coconut crop. The nuts are gathered in all seasons and are used both in the green or soft and in the ripe or hard state by all classes. The yield, however, must be enormous, as there are few households that do not use the nuts in some form or other, and in spite of the vast number of trees, the supply does not seem to equal the demand.

Before the shell of the nut becomes thick and hard, and while the meat is soft and about the consistency of clabber, many of the nuts are gathered and sold upon the street corners and in the drink shops. The nuts are cut open with a machete The milk proves a most refreshing drink, while the meat is eaten with a spoon or, more often, with a silver cut from the shell. No attempt is made to husk the nuts so used, though frequently a portion of the husk is trimmed off to lessen weight for transportation.

The hard-shelled or ripe nuts have various uses. When of good quality, they are sold at retail. Many kinds of sweet-meats are also made from them, while the milk and the meat, variously prepared, are constituent parts of many articles of daily diet, such as fish stews, beans, rice, corn, etc. The ripe nuts are always sent to market husked. They are brought to Bahia by small sailboats, which ply up and down the coast, and on account of the demand are sold at comparatively high prices. The price paid for them at the plantations ranges from 9 to 14 milreis ($2·18 to $3·36) per hundred (without respect to size,) according to season, the wholesale price in Bahia City being a couple of milreis higher per hundred. The retail price is from 120 to 320 reis (2,88 to 7·61 cents) per nut, according to size and season.

There is such a demand for good nuts at Rio de Janeiro and other points south that it is far more porfitable to ship the nuts there than to utilize them in the manufacture of copra; and even if the prices at local markets were not so good, there would, nevertheless, be no nuts for foreign export.

It is only the nuts that have been left too long on the trees that are utilized in the manufacture of by-products. From these nuts the oil is crudely extracted by grinding the meat submitting it to pressure and purifying the resulting liquid, or by grinding and boiling the meat, and skimming the oil. This oil is used for machinery, lamps, cooking, soap-making, etc. It is also used by the resident Africans for hair oil and for anointing the body. It sells at wholesale at the place of manufacture at from 800 to 1,200 reis (19·2 to 28·8 dollar cents), per litre.

There is still a great amount of uncultivated land well suited for coconut plantations. Few trees are being planted, yet it requires no labour other than that of putting a mature nut into the ground prior to the rainy season, and that after five or six years the trees will bare almost indefinitely.

COCONUTS IN COLOMBIA.

The consul at Cartagena, Colombia, was placed at a disadvantage in gathering data for his report on

account of the revolution in that country. "Under ordinary conditions," writes the consul, "the raising of coconuts is an interest of considerable magnitude, and a fair amount of attention is bestowed upon the groves and the collection, husking, sorting, and packing of the nuts. It may be said that, with rice, the coconut is the main source of food supply of the natives of the coast.

"Owing to the above-mentioned conditions, the extent of the coconut crop of this district is unknown. Coconuts are grown both for home consumption and export. They are not shipped in the husk. The price at the present time is from $12 to $14 gold per thousand.

"Coconut plantations in the Colon district of Colombia are confined to a strip of land contiguous to the Atlantic Coast, and to the Island of San Andres, belonging to Colombia, lying about 275 miles from Colon in a north-westerly direction. There are no plantations in the interior. On the coast, by far the greater proportion of coconuts is raised by the San Blas Indians, on a strip of country about 125 miles long extending from Point San Blas to Point Tiburon. Besides the plantations owned by these Indians, there is only one other on the coast—the Caribbean Coconut Plantation, at Point Toro, across the bay from Colon. This plantation consists of about 20,000 trees.

"The entire coconut crop of the coast amounts to about 4,000,000 nuts a year; that of the Island of San Andres to about 2,500,000.

"Coconut trees are raised by first putting the dry nut on the ground and allowing it to sprout until it attains a height of about two feet. The nut is then put in a hole just deep enough to receive it, the sprout remaining above ground. The only attention the palm requires is to keep it free from weeds and other plants until it is five or six years old. After this age it is able to protect itself, and the ground requires very little cleaning. Trees properly attended to will bear in from five to six years.

"All nuts raised in this district are sent to the United States. They are never shipped in husk. The market price fluctuates between $21 and $40 per thousand. From March to September, it rarely reaches more than $25; from September to March, $25 to $40.

COCNUTS IN ECUADOR.

"The cultivation of coconuts receives very little attention in Ecuador, most of the palms being grown as side issues upon the various estates. The few raised are for local consumption only: none are shipped. The price is 10 cents silver ($4\frac{1}{2}$ cents, in United States currency) per nut, retail.

COCONUTS IN THE GUIANAS.

"The coconut crop of British Guiana amounts to about 5,000,000 nuts annually. The cultivation of coconuts receives considerable attention in the district of Mahaicony, about 30 miles up the east coast from Georgetown, in the vicinity of the Decerara and Berbice Railway. The nuts are mostly made into oil at the oil and fibre mills at Mahaicony, and the product is sold and consumed in the colony. Less than 2,000 husked nuts were exported last year. These were shipped to the British West India Islands.

"The prevailing price in the local market is from $8 to $10 per thousand.

"Only about 50 000 nuts per annum are produced in Dutch Guiana, and an insignificant number in French Guiana. These are consumed locally.

COCONUT IN VENEZUELA.

"At La Guayra, the annual crop of coconuts amounts to about 1,000,000. At Barcelona and Comana, however, it is much larger; the latter could easily furnish 5,000,000 nuts a year. The cultivation of coconuts receives very little attention in La Guayra, and practically no efforts are made to extend their growth. There is no reason, however, why the present area should not be increased, as the palm thrives wonderfully along the coast, and nearly all of the land within half a mile or a mile of the sea could be utilised.

The nuts grown in the La Guayra district are mostly absorbed by the local retail trade of the cities of La Guayra and Caracas, a great many being sold to the natives who drink the milk. The nut is also used for cooking, confectionery, etc. In Cumana, most of the crop is manufactured into oil. This oil is said to be of an excellent quality. A few nuts are occasionally shipped from La Guayra to the United States, but the trade is not profitable. The harbour dues on all kinds of freight is $4 a ton, and planters find that it pays them better to hold the nuts for local consumption. Coconuts are never shipped in the husk.

"In La Guayra the price of coconuts is from $2·50 to $5 gold per hundred: in Cumana, from $2 to $3.

"The production of coconuts in the Puerto Cabello district of Venezuela is limited, as there are but few trees. Very little attention is paid to their cultivation and the supply is decreasing. The soil, however, s excellent for the growth of this palm.

"The nuts are marketed here green for the coconut water they contain; ripe, for the meat. from which oil for soap-making and other purposes is extracted, and as copra, for foreign shipment. The green coconuts are sold for 1 cent each, ripe ones at about the same price, and copra for about $2\frac{1}{2}$ cents per pound.—*Indian Gardening and Planting.*

TROPICAL TIMBERS AND THEIR RINGS OF GROWTH.

With reference to Mr. Herbert Wright's paper in the *Tropical Agriculturist* of last October, we reproduce the following article on "The Rings of Trees," reprinted from *American Gardening*:—

THE RINGS OF TREES.

The following interesting article by Mr. H. H. Chapman, of Grand Rapids, Minnesota, in *American Gardening*, should be read in conjunction with Mr. Herbert Wright's valuable contribution, "Tropical Timbers and their Rings of Growth," which appeared in our issue of 22nd August 1901.

Every tree has its life-history securely locked up in its heart. Each year of its growth a thin ring of wood is formed next to the bark and a corresponding layer of bark adjoining it. As the tree swells and swells, the bark is forced outward and splits into wide fissures. Much of it falls off altogether, but each ring of wood remains a faithful record of the year in which it was formed. When the axe or saw of the woodman ends the life of the tree and brings its body crashing to the earth, this record is unrolled before us, and by it we can determine almost every incident in the life and growth of the tree.

Trees as well as human beings have their period of struggle and hardship, their prosperous times, their terrible misfortunes and hairbreadth escapes, their injuries, and recoveries; their complete submergence in a struggle in which the odds were too great for their feeble strength to cope with.

Here is a sturdy oak, whose tale revealed is that o steady perseverance in the face of difficulties—a slow gradual growth, never checked, never daunted, till the final goal is reached and it stands supreme, literally monarch of all it surveys.

Here is a mighty spruce which has a tale of perseverance, but of a different sort. The oak conquers by force of character by its fighting, qualities. The spruce succeeds by its ability to endure. It is like the patient Jew, frugal living on what would be starvation to others, till when their day of strength is past, and sudden disaster overtakes them, he enters into his inheritance and prospers amazingly.

See the record of this spruce—fifty, sixty, seventy years, each represented by a ring so small that it takes great care to distinguish them at all, and the whole seventy do not occupy the space of three inches at the heart of the tree. What a tale of hardship this sets forth. Other trees have pre-empted the light in which the existence of a tree depends. The poor spruce must be content with the twilight that filters through the branches of its enemies, the popular, birch and pine. But it is content. It knows that the young

poplars or pine spring up beside it in the shade they could not endure, but would quickly die. It knows that the time will come when old age or disease will weaken the poplars, or perhaps a heavy wind will lay them low, and the spruce, old in years, but insignificant in stature, will escape injury, and still young in vitality, will soon spring ahead in the race.

Now see its rings—it has made as much growth in ten years as in the preceding seventy, and soon becomes a large tree.

What does the stump of this old white pine teach us? Evidently something extraordinary has happened to it, for way in near the heart a black scar runs around the edge of one of the annual rings for nearly one-fourth of its circumference, and outside of this the rings are no longer complete, but have their edges turned in against the face of this scar. Each subsequent ring reaches further across it. By the time they have met in the centre many years have elapsed, and there is a deep fissure where the scar once existed. But the later rings have bridged the gap and, growing thicker in the depression, soon fill up the circumference of the tree to its natural roundness, leaving no sign of the old wood. What happened to the tree? While it was still young its mortal enemy, the forest fire, swept through the woods, destroying most of its companions and burning a large strip of tho tender bark on its exposed side so that the bark died and fell off. But being better protected than the other and having still three-fourths of its bark left uninjured, it soon recovered and its stump reveals how successfully it strove to heal the wood and grow to maturity to perpetuate its species.

But as it takes many swallows to make the summer, so it takes many trees to make a forest, and the forest has almost as much individuality as the tree itself. Though each tree and each species struggle with each other for life and supremacy, yet in a sense they are helpful to each other, and protect each other from their common enemies.

The enemies of the forest are the wind and the fire. Other enemies there are, such as insects and disease, and sometimes the forest suffers so severely that its whole aspect is changed and new species come in and replace the old. Much of this history the rings will reveal to us, as is the case in some of the following actual examples from studies recently made in the pine forests of Northern Minnesota.

In one locality where rather small Norway pine stood very close together, making a thick stand, it was found that almost without exception the trees were of the same age—138 years. No matter how large or how tender the tree, it was just as old as its neighbour.

The rings on all these trees were very large at the heart, but as fifty or sixty years went by, they got narrower and narrower, until some of the smaller trees seemed hardly to grow at all. The reason was plain; there were too many trees—and as none would give up the struggle, all suffered alike.

But they were not the only sufferers. Here and there we see a slender, struggling white pine making a vain attempt to capture its share of sun and rain. Count reveals that these white pines are also all of the same age, but unfortunately only 126 years old. The Norways had twelve years the start of them and the delay was fatal.

How did it happen that these trees came in so thickly and all the same year? Perhaps further study will help us to find out. So we go to another cutting over a mile from first. Here we find many trees about the size of those we have left, and counting the rings we find them to bo of the same age—138 years. But here there is something more. In a secluded nook stands a group of immense white and Norway pine trees—perhaps a dozen. These prove to be very old, but, remarkably enough, also of even age—each stump showing 315 rings. Where is the rest of this patriarchal forest? Close about the few remaining may be seen the forms of many more stretched upon the ground and slowly decaying. These have evidently been blown down, possibly after being killed by fire. Their fate gives up the clue to the disappearance of the others. It is plain that some time before 1763 a great disaster overtook the pine forest in this place. Most of it was wiped out of existence, either by fire or wind. But here and there a clump remains, and from them in a favourable seed year came the seed which started the new and thriving crop of Norway pine.

To find out if possible whether this conflagration or blow-down was more than local we go to a cutting some ten miles from our first, and here again the oldest and largest of the stand, which is all rather small, prove to be 138 years old. Whatever the cause then, it must have operated over a large area, but this is not a thick stand; in fact, there are many gaps, and much of the timber is limby and knotty, a sure sign that it has not been grown very close together, and soon we find that many—in fact most of trees—are but 101 years old, there being two distinct age classes.

How did this come about? Let us look at the older trees. Here upon one of them is a fire scar made when the tree was eighteen years of age. Upon another we find a similar scar, made in the same year, and on close examination we can hardly find one of the older trees free from the marks of this fire. How plain it is that this fire occurring just 120 years ago, or in the year 1781, when the young forest was eighteen years of age, killed nearly all the young pine and gave the forest a blow from which, in this place at least, it never fully recovered. But it did the best it could, for the age of the second class of trees—101 years—shows that the young survivors of the fire grew rapidly, until at the age of 38 years they were enabled to produce a crop of seeds, or possibly the old trees from which the first ones came were stilling living and seeds down the ground a second time, so that a fairly good stand of trees was finally produced.

These studies lead us to infer that pines reproduce themselves as forests generally under exceptional or unusual circumstances, and that that is their natural way of maintaining themselves as species. The young white and Norway pine, especially the latter, cannot endure much shade when small, and could not possibly grow up as a thick forest under their own shade or the shade of other trees, yet we nearly always find them in dense groves. The rings tell us the secret. In the long period of 200 to 300 years during which the pines live, the "accident" of fire or wind becomes a certainty, and when a strip of forest is laid low or burned up, the neighbouring trees stand ready to scatter the seed far and wide in the wind and the new growth springs up and flourishes.

This is nature's method. But nature's methods are so perfectly harmonized that but little is needed to throw them out of balance.

Nature clears in strips and dashes seed there, and fires are rare and far apart. Man clears over wide areas and fires of his origin sweep repeatedly over his slashings. The young pines spring up even after the second and third fires, but by perseverance the fires finally destroy them all, and what nature intended to be the young pine forest becomes a barren wilderness.

SIMPLE CURE FOR GAPES IN CHICKENS.—Punch some holes in the bottom of an old tin bucket. Get a piece of glass large enough to cover the top. Put a hot coal in a saucer, and pour a drop or two of carbolic acid on it. Place the chickens in the bucket, and set the latter over the saucer. The fumes of the acid will rise through the holes. Do not put the bucket on till the first fumes have passed away. Watch the chickens through the glass so that you may not smother them. If they seem overcome take the bucket off the saucer and remove the glass. One operation is usually sufficient. By doing this, you will lose no chickens from gapes.—*Queensland Agricultural Journal*, Feb. 1.

THE GAME FOWL SHOW.

(*By a Specialist.*)

The Game Fowl Show at Temple Trees was a pleasant gathering and was a distinct success. The afternoon was fine and the arrangements were very simple but complete. There was no great crowd or crush and the birds could be seen in comfort.

The men were strongly in evidence, while the fair sex with a few exceptions were conspicuous by their absence. This perhaps was only to be expected for the Game Fowl is essentially a man's bird, and is scarcely likely to be regarded by the fair sex as anything but an ugly and cruel-looking creature. These birds are born fighters, even the hens are very pugnacious. As it was two of the hens were going it hammer and tongs by getting their heads out through the wire netting and a special board erection had to be put up to keep their heads apart. The cocks were unable to indulge in a 'mill' as their wire netting was of smaller mesh and prevented their getting at one another. The number of the birds was about 60; of these there were twice as many cocks as hens. The points about the birds that strike the ordinary poultry keeper most were the size of the cocks, some were monsters—the heads are unlike those of ordinary poultry in being very broad surmounted by a peculiar-shaped comb and with a beak very powerful and curved which, with the overhanging eye-brow, gives this bird a vulture-like appearance betokening savage cruelty.

The feathering too is peculiar to this breed, there is no surplus of feather, no fluffy birds are seen; the feathers on the contrary being scanty and hard and held very close to the body. The legs also attract attention, being very thick and powerful and armed with huge spurs. The tameness of the birds was very remarkable especially of the cocks. They had not the least objection to being handled or touched; this is the rule with fighting cocks; many of them must have been great pets with their owners. The exhibition of ferocity is only reserved for their own species. It was remarked as a curious point that several of the hens had one long spur which would have graced the leg of a full grown pugilist; but in no case had any of them these long spurs on both legs. The condition of the birds as a whole was good, though several were a little out of condition and one or two had diseased combs.

It was originally intended to classify the birds under three classes; for the three breeds that were likely to be met with in Ceylon viz; the pure-bred Malay; the pure Indian Game (or Azeel); and a class for the Local game fowl of no special type. It was found however exceedingly difficult to define many of the birds. The preponderance was largely Malays and nearly all the others save one had a strong dash of the Malay about them. There seemed to be only one real Indian game cock in the show. And it was wisely decided to put all into one common class.

As to the colouring, the majority of the cocks were "Black Breasted Reds." And there were several in which the colouring was very good, but in the majority there were a good many white feathers, which, though doubtless never shown in battle, greatly marred their beauty on the exhibition stand. In fact many of the finest of the cocks were thus mismarked. There is no doubt that here in Colombo, if not in Ceylon at large, *the colour* to breed is the Black Breasted Red. Curiously there were no black cocks nor any buff ones and there was only one pure white. Amongst the hens there were seven blacks, but only one white, wh le there were several buffs and browns of various shades. There were two very good smoke-coloured hens, and also a similar cock which did not however come up to the hens.

A little care in breeding the Black Breasted Reds should in time breed out the stray white feathers and make the bird true to colour.

As to *Type* the large majority of the cocks were nearer the Malay type than the Azeel. It is far easier to secure a good Malay than a good Azeel. The latter is a costly bird and is bred chiefly in Hyderabad and Deccan. They are bred by the Pakeer Poultry Farm (E.I. Ry) and are sold accordingly to quality at R20 to R100 per bird!

There were over 20 hens exhibited. The first seven were blacks. No. 2 would probably have attracted more attention, had she not been inclined to be broody. No. 3 came in for a good deal of attention, she had a fine head and neck and the feathering was close; had she been a larger bird she would probably have come out higher; being rather undersized, she came out third and won the third prize. No. 7 attracted many admirers; no other hen stood so well. It had the type of a true Indian game. The head was good, the neck long and the feathering very close and tight, carried her tail well and had fine strong legs, The 2nd prize was carried off by this bird. After the blacks came the light drabs, buffs and browns.

No. 9 was a very taking bird and was greatly fancied, almost every body that voted gave this bird a vote, the majority considering this the best hen. It easily won the first prize. It was a heavier bird than No. 7 and was of a light reddish drab colour, doubtless a Malay hen. The head was powerful, the shoulders broad, a good-shaped body and tail carried well. The marking was even and the feathering close. No. 13 was one that was fancied by many, a dark drab big bird, with a fine head but not in the best of condition. No. 15 had a strong backing, the head was excellent. This was one of the hens with a single huge spur. The remainder attracted little notice except No. 23, a pure white hen with many good points, but with the blemish of whiskers. This hen stood fourth on the list of competitors.

It was a noticeable fact that many of the hens had whiskers and bibs and far too much hackle feathering, all of which are serious blemishes in a game hen. The judging of the hens seemed to be a very simple matter and the unanimity of awards was very striking. The cocks seemed to perplex the Judges very much. It was easy enough to enumerate a large number as not in the running. It was in fact strange how one or two came in as game fowl at all, they possibly qualified as being very game in fight.

The favourites among the cocks were No 2, 11, 13, 15, 17, 18. Mr Livera won the first prize with No 2 which was a fine young Malay cockerel which looked as if it would grow and fill out still more. It was a black-breasted red, the colouring beiug very handsome. It had the typical head with long close feathered neck, splendid shoulders held well out, strong thighs and legs, but it was by no means the biggest of the cocks. The silver cup presented by Mr A

Y Daniel was won by this bird. Mr S Sarasinghe's No 15 took the 2nd prize, while the third fell to Mr C E Siebel's No 13. These three Malay cocks were very close together in the voting and it is hoped that they will meet again at the big Poultry Show in August. It may be interesting to know there were at least ten cocks that did not secure a single vote (where were their owners ?) while there were seven that only received one vote. The judging was certainly a novelty, it gave great zest to the Show and increased the interest of all in the proceedings, and further it gave satisfaction to all. While heartily approving of the method in the small Shows of a single breed, it would of course be unworkable in a large mixed Show.

MOSQUITOES AND COLOUR.

Mr. Herbert L. Thowless writes from Newark, New Jersey. U.S.A., under date January 29 :—"In a recent number of *The Times* appeared an article entitled 'Mosquitoes and Colour.' This article interested me because this State suffers from this pest. I clipped the article and sent it to Professor John B Smith, State Entomologist, Rugter's College, NewBurnswick, N.J. Professor Smith writes me that he knows the facts as stated in the article, relative to colour affecting mosquitoes, to be true. It is a common observation along the seashore that the person wearing a black coat is more pestered than those in grey or yellow. The Legislature of the State of New Jersey is to be asked for a special appropriation of $10,000 (£2,000) to be used to investigate the mosquito problem. In the vicinity of New Jersey, at the town of South Orange and at other places, ponds and stagnant water were coated with crude kerosine oil during the summer of 1901, and there was noted a marked decrease in the pest. This section has the misfortune to possess many thousands of acres of tide-marshes, and these marshes are fertile breeding places for mosquitoes. There does not appear to be much literature on the subject of mosquitoes, but the United States Agricultural Department prepared and distributed a monograph on mosquitoes and scattered it throughout the land. Copies can be had on application to the Secretary of Agriculture, Washington, D.C., U.S.A."—London *Times*, Feb. 12.

CEARA RUBBER IN WEST AFRICA.

A letter from Lagos, dated 6th January, contains the following:—

"Can you please give me the latest result and all information about the cultivation of all kinds of rubber, and especially about the experiment of extracting rubber from yearling rubber trees ? The last information to hand about this experiment (*Tropical Agriculturist*, Aug. 1899) was that it was being tried with yearlings of castilloa elastica, the Mexican rubber tree. With what result and whether it has been tried with yearlings of other kinds of rubber tree, as you proposed, I have not been able to know. (We recommend our "Rubber Manual" to the attention of our correspondent.) Our planters here have thousands of ceara trees on their lands; but the latest and best result obtained so far is only (½) half an ounce of fine elastic rubber per tree, which I obtained some time last month from the tapping of some isolated trees at Abeokuta—a town upcountry four hours distant by rail from Lagos. The people are naturally disappointed and contemplate cutting down their ceara trees. But I advised patience and raised their hope by promising to write to you for the latest information on the subject, especially about the experiment of extracting caoutchouc from yearlings. I hope you will be kind enough to favour us with some interesting and hope-raising information on the subject."

TROPICAL MALADIES.

INTERESTING LECTURE BY DR. JOHN ANDERSON.

In a paper read before the Medical Society of London, Dr. John Anderson deals with the remote effects of tropical life on Europeans. Dr. Anderson is lecturer on tropical medicine at St. Mary's Hospital Medical School, and points out that in hot countries, for example India, the temperature of the body is higher, the respiration slower, the capacity of the chest for air is higher, so that the relative proportion of blood and air in the lungs is altered. The tone of the nervous system is also depressed. When a man, after long residence in India, returns to Europe, he is less adaptable to the second change of climate.

Malaria and its consequences are very detrimental to the health of Europeans in hot countries. Among the consequences are albumenuria and neuralgia. Serious conditions of the nervous system also result from sun or heat strokes, for example, epilepsy, blindness, deafness, and even dementia. In milder cases the patient cannot bear prolonged mental effort, and heated, stuffy rooms cause headache, insomnia, irregularity of the heart's action, depression or irritability of temper. Such symptoms often disappear with cool temperature, avoidance of exposure to the sun, or of alcohol and excitement. Anæmia with enlargement of spleen is another consequence of residence in the tropics. Chronic hypertrophy of the spleen is an effect of malaria. Many diseases, for example typhoid, are complicated by malaria. Abscess of the liver is also a remote effect of Indian life, not easy to diagnose or discover. Chronic dysentery is another after-effect of long tropical residence. Mediterranean fever, ascribed to a microbe (the micrococcus melitensis), is not deadly, or associated with malaria or typhoid, though in its earlier stages it may be mistaken for these. Dr. Anderson's lecture, while suggestive, shows how much medical men have yet to learn with regard to tropical maladies.—*Globe*, Feb. 14.

GROWING TOBACCO UNDER SHADE.—An enthusiast on the subject of growing tobacco under shade estimates that within the next five years there will be no less than 6,000 acres producing wrappers under cheese-cloth in this country. At, say, 1,500 lb. to the acre, the yield would be 9,000,000 lb.—enough to wrap the cigar product of the country, and something left for export. The samples of the tobacco grown under shade in Connecticut which have been shown in the market are absolutely without a defect.—*Queensland Agricultural Journal*, Feb. 1.

THE U. S. A. GOVERNMENT AND RUBBER.

The present attitude of the department of agriculture at Washington towards the investigation of rubber resources and production merits the approval and support of every branch of the rubber trade. There is no longer any reason why rubber —any more than wheat, or tea, or hemp—should remain a forest product, to be gained by unsystematized and uneconomical methods. Much has been done by individual private enterprise in the direction of bringing the production of rubber under more intelligent supervision, but vastly more remains to be done. The rubber belt is so wide and the conditions so varied involving, among other things, so many rubber species, and the whole production is so remote from the centres of consumption, that any changes based upon unconnected individual enterprises must be slow.

While the gathering and marketing of rubber—and its planting, for that matter—must always be under private control, and based upon private capital, governments can render great help to the interest, particularly in the way of collecting and disseminating correct information. Reports by trained scientific observers, intent upon discovering facts rather than making profits, when published officially, gain a wider circulation and are accepted as more trustworthy than even similar reports from any private source. Of the mass of printed matter in *The India Rubber World's* library regarding the sources and conditions of natural rubber supplies, by far the greater part is the result of official or semi-official investigations. There is not one book in the lot written by a private individual who has travelled in and studied any rubber country on his own account.

The United States government in the past has given little attention to the subject of rubber, considering that more than half the world's production is consumed in this country. But now that we have extensive tropical possessions, the same reason exists for studying the development of a rubber interest in them that has appealed to every colonising power in Europe. The present disposition at Washington is to discover, not only what plants of economic value exist in our tropical territory, but what plants in other countries of corresponding latitudes may be introduced profitably therein. The department of agriculture, in making the estimates of money needed for the coming fiscal year, has included the following clause, which, it is understood, refers in an important degree to rubber :

BOTANICAL INVESTIGATIONS AND EXPERIMENTS,— ......; to investigate and publish reports upon the useful plants and plant cultures of the tropical territory of the United States, and to investigate and report upon them, and introduce other plants promising to be valuable for the tropical territory of the United States, such plants and botanical and agricultural information when secured to be made available for the work of agricultural experiment stations and schools .... $65,000.

It might tend to influence Congress favorably in respect to voting the appropriation if citizens engaged in the rubber trade would write, approving the measure, to senators and representatives from their States, or whom they know personally ; or letters might be directed to the chairmen of the committees on agriculture, of the Senate and House of Representatives, respectively.—*India Rubber World*, Feb. 1.

RUBBER IN ASSAM, 1901-02.

The quantity of rubber collected and sold by direct Government agency in the Kamrup and Darrang districts was as follows :—

		Mds.	R.
Kamrup	..	39	6,987
Darrang	..	28	5,040
Total	...	67	12,027

During the year, the exclusive right of collecting and removing rubber on payment of duty from outside the Government plantations in the Darrang district was sold for R22,100 against R16,900 in 1899-1900.

The total outturn of rubber for the year was 3,592 maunds, against 5,558 maunds in the previous year. This large decrease was entirely due to the small quantity of foreign rubber imported into the province as may be seen from the figures given below :—

		1899-1900. Mds.	1900-1901. Mds.
Manipur	...	409	392
Bhutan	...	406	42
Dufla and Aka Hills	...	1,148	583
Naga, Mishmi, and other neighbouring hills	...	2,853	1,786
Total	...	4,816	2,803

—*Planting Opinion*, March 1.

PASSION FRUIT.

Question.—What is the best method of collecting and preserving passion-fruit seeds? when is the best time for planting them?

Answer.—In Southern Queensland, on the coast, plant in September; in North Queensland in March. To save the seed, take out the pulp of several fruits, press it lightly so as not to injure the seed. This will remove a large amount of the moisture. Put the pressed pulp and seeds into a tin and let it dry. It will keep for a very long time. When you intend to sow the seeds, soak the cake for a time in water.—*Agricultural Journal*, Feb. 1.

GUTTA-PERCHA NOTES.

Dr. Treub, the director of the Botanic Garden in Buitenzorg, is in negotiation with his Government to establish with Government aid a Palaquin Gutta plantation on a space of about five thousand acres in the Plabocan district, in the province of Saekaboemi and near the plantation of Tjipetir; the splendid results of the Tjipetir plantation have already been stated in previous numbers of this journal.—*La Gazette Coloniale.*

In their annual report Messrs Kramrisch & Company write as follows :—Gutta-Percha: The year opened with a very poor demand, and the market continued weak throughout almost the whole of the year. It was only during November that, owing to larger contracts for cables being placed, extensive buying orders appeared on the market, thus increasing values of Gutta-percha, and since then a fairly large business has been done. There seems to be every prospect of a continued good market, with fair prices being paid for good and desirable qualities of gutta-percha.—*India-Rubber Trades' Journal*, Jan. 20.

A NEW PROCESS FOR THE RECOVERY OF INDIA-RUBBER.

Our esteemed contemporary, the *Gummi Zeitung*, in its last issue contains a rather enthusiastic article on a new process for the recovery of india-rubber, the invention of Mr Albert Theilgaard, of Copenhagen.

Any new process of this description is worth careful attention, but evidence so far submitted in proof of what this process actually accomplishes is hardly sufficient for us to share the sanguine expectations of our contemporary. Great stress is laid, in two expert opinions accompanying the article, upon the fact that this new recovered rubber may be re-vulcanised, and that it contains a very small proportion only of combined sulphur. All this may be true, but Messrs Somerville, of Liverpool, have for years been selling a re-covered rubber of this description, and Messrs Rowley, Manchester, and the Rubber Chemical Company, of Mitcham, for some considerable time have been manufacturing an excellent product of this sort. Nor is there much to be said about the low percentage of combined sulphur in the new product, as long as no reliable information is to hand respecting the percentage of combined sulphur in the stock before recovery. The new process appears to consist in a treatment of the waste with alkaline sulphites and appears to rely upon their well-recognised property to dissolve sulphur (free), as also upon its reducing (oxygen absorbing) powers. But as to the first of these properties, this could only allow of the removal of the free sulphur, but not of the combined sulphur, and the reducing properties of alkaline sulphites are well recognised to be of a very low order only, so that the reduction of rubber, deteriorated by oxidation, to oxygen-free rubber by this means is a statement calculated to make us rather sceptical. If true, it would involve, as a matter of fact, the discovery of, so far, totally unexpected properties in a particularly well-known and much-used chemical substance. There is, of course, nothing impossible in this, but merely ground for reservation of judgment. India-rubber has been in the past, and will be for some time to come, the subject of startling announcements. We hope to revert to this subject, as to the matter of re-covered rubber in general, in the near future.—*India-Rubber Trades' Journal*, Feb. 3.

DOES SUGAR-CANE EXHAUST THE SOIL?

Question.—For some years my land (scrub) has produced good crops of cane, but of late the crops have been almost too light to pay for cutting and loading. Yet I can get very good crops of corn or potatoes off the same land. Has the cane exhausted the soil?

Answer.—There is practically no such thing as an exhausted soil, but the available plant food near the surface may have been exhausted. In your scrub soil there is plenty more of the plant food which sugar-cane requires, but it is out of reach of the roots, and requires to brought up either by subsoiling or by growing nitrogen-producing plants. Again, the soil cannot be exhausted, as you say you can get good crops of corn and potatoes from the land. It is the plant food needful for cane which has been carried off year by year till little is left. A glance at the following table will at once show you the reason for the failure of cane-crops.

Crops remove from the soil plant food in the following proportion:—

	Nitrogen.	Phosphoric Acid.	Potash.	Lime.
Sugar-cane ...	127	44	298	71
Wheat ..	43	23	36	16
Barley ...	47	23	54	11
Maize ...	61	31	66	14
Rice ...	41	26	68	10
Potatoes ...	26	13	48	2
Cotton ..	54	19	40	25

From this, you can at once see that sugar-cane extracts from the soil about five times as much nitrogen, three times as much phosphoric acid, and six times as much potash as do potatoes.—*Queensland Agricultural Journal*, Feb. 1.

TEA IN AMERICA.

A well-known Dundee gentleman who has just returned from a tour in the States, writes as follows:—"Throughout the whole 4,000 miles I travelled the tea was much finer in quality and flavor than on my former visit. Of course, green teas were largely in evidence but even away down south in Texas they had splendid black tea which they described on their bills of fare as 'English Breakfast Tea' and the same on the Pullman cars. I could not find out if these teas were from Ceylon."

UGANDA AND THE UGANDA RAILWAY:

500 MILES OF COUNTRY OPENED UP TO THE GREAT LAKE;

RUBBER, COFFEE, TOBACCO AVAILABLE.

Commander Whitehouse, R.N., brother of the Chief Engineer of the Victoria Nyanza Railway, and who himself has done splendid work in surveying the great lake, has been lecturing on the above subject —reference to which is made in our telegraphic columns this evening—before the Colonial Section of the Society of Arts with Sir Henry M. Stanley, G.C.B., in the Chair. The railway from Mombasa (sea level) to Port Florence (3,726 feet above the sea) on the Victoria Nyanza is 582 miles in length with some 30 intermediate stations. It rises to 7,900 feet at the 355th mile; descends to 6,000 feet, mile 430, at Lake Elmenteita; rises to 8,320 feet (higher than Pidurutalagala) at mile 490 on the Mare ranges; and then runs down 4,600 feet in the last 100 miles through country no European had ever penetrated previous to September 1898. The journey from Mombasa to Port Florence will take 2½ days with 1 day more for a steamer journey to Mengo, the capital of Uganda, against 70 days at the least by the old caravan route from the coast to the capital. The Chief Engineer and his staff arrived at Mombasa on 11th December 1895 and the first locomotive reached the great Lake shore on 19th December 1901. No wonder, though, Sir Guilford Molesworth K.C.I.E., in the after discussion, spoke of the great work done in the face of unique difficulties:—unknown country, newness of

staff, two languages to learn, want of water, absence of animal transport owing to tsetse fly, difficulty with lions (28 coolies carried off by 2 lions in one night, and Mr. Ryalls torn from a carriage on the line by a man-eater who carried him off through the window, while two companions in the carriage were left untouched, but helpless to interfere)—difficulty with "jiggers" which often caused men to lose their toes; 15,000 workmen to be organised; difficulties with fever in parts, and wild beasts everywhere (during Sir Guilford's visit 280 out of one gang of 320 men were down with fever and 7 out of 8 engine-drivers!) The successful completion, in spite of all this, reflected the greatest credit on Mr. George Whitehouse and his staff. The warlike tribes *en route* are already quieting down; and the slave caravans and trade have for ever ceased. Stanley's memorable journey to the lake was in 1875 and now he sees his most sanguine anticipations already anticipated: 90,000 Christian people in Uganda with 320 Churches, and many thousands of children in school, and this great railway and a first steamer (the "Wm. Mackinnon") on the Lake, where within 10 years there would be 50. The survey of the lake coast line, 2,200 miles in 13 months, was also a great work, and they had also the telegraph wire with daily news to the very centre of Africa. Game is still very plentiful in great varieties close to the line at certain points: gazelle, harte-beeste, ostriches, bustard, wildebeeste, zebra, grouse, spur-fowl, hyenas, etc. Lions often cross the railway: five or six at a time; or a lioness and cubs. The game laws are now strict: visitors pay £50 to shoot a limited number of beasts; but a reward is paid for every lion shot between certain stations. "Plenty of fish" in some of the rivers, very like mahseer, which give good sport with light tackle and a gold and silver spoon. The climate for 300 miles—between 238 and 550 miles—is very pleasant. The Swahilis (the Seedee boys of steamers) are the most useful of the natives and their language is becoming universal. Sir Harry Johnston, G.C.B., spoke to the kind treatment of the natives by the surveyors and engineers and Sir T. Fowell-Buxton, Bart, G.C.M.G., spoke to the wonderful fulfilment of many of Stanley's prophecies of only 27 years ago; and alluded to Bishop Tucker's new Cathedral now in course of construction in Uganda. Finally as to products:—Coffee grows well in Sesse and Uganda and *Rubber everywhere*: Landolphia rubber vines are on all the islands in the Lake. Castor oil plant grows everywhere. Tobacco grows well and is much used by the people. Good crops of potatoes and other vegetables have been raised. Extensive and good hill forests are ready for planters. Cheap labour for settlers in Uganda is freely available. The Lake coast region is very healthy and great fisheries may eventually be developed here; but this region is subject to frequent storms, scarcely a day without thunder and in the first survey during 1898, there were 17 violent storms during 21 days! But on the hills at Nairobi, for instance, the climate is delightful, European children prospering there. Undoubtedly here is a great region ready for pioneering, and probably the collection and transport of "rubber" to the coast will be one of the first industries started.

CEYLON GREENS PRAISED IN CANADA.

Says the *Canadian Grocer*:—"The first samples of Oolong produced in Ceylon were before The 'Salada' Tea Company one day last week. They somewhat resemble the finest Formosas. If these teas can be produced in Ceylon there is a great trade for them in the United States. Mr Larkin says that, while they are slightly different from Formosa, they are the finest teas of the kind he has ever tasted."

PRODUCE AND PLANTING.

TEA IMPORTERS AND WHOLESALE DEALERS OF NEW YORK

are much incensed over the action of the House Committee on Ways and Means in reporting a Bill for the repeal of Spanish war taxes on nearly everything, except on teas, on which the duty is to remain in force until January 1, 1903. It is proposed by the tea merchants to make a protest to Congress, as, they say, there is no reason whatever why discrimination should be made against tea. Mr. G T Matthews, head of one of the large wholesale tea Companies, when interviewed on the subject, said: "This action of the Ways and Means Committee is an outrage. It is made on the plea that the country is so well stocked with tea that it will take at least a year to work it all off upon the market. Everyone who knows anything about the business is aware that there has not in many years been such a small stock of teas on hand in the country as now, for the reason that the importers have for several months been expecting that Congress would remove the duty. I venture to say that all the tea on hand in the United States to-day can and will be consumed by the public in less than two months and the tea trade in general will have to stock up again at war tariff rates."

THE DIRECTORS OF THE AGRA-ELBEDDE (CEYLON) TEA ESTATES, LTD.

are not only courageous, but they exhibit their faith in the present and future productiveness of their property. At a time when tea prospects are not considered by the investing public as altogether rosy, and in view of the fact that investors are critical and fairly well able to judge for themselves the issue of this prospectus proves the directors' claim well-founded. In the interests of the British-grown tea industry we hope that the anticipation held out will be justified by results, and that another steady dividend-paying concern will be added to the list of Ceylon tea companies.

CALIFORNIAN OLIVE OIL.—The season just ended has been most satisfactory to olive growers. The Los Angeles Olive Growers' Association expects a yield of between fifty thousand and sixty thousand gallons of oil, worth $2·50 per gallon. The Association has 1,100 acres in the San Fernando valley. The yield at Andrew McNally's ranch near Pasadena is estimated at about ten thousand gallons of oil. The value of the crop of picked olives in Southern California is estimated at about $75,000, and the value of the oil when marketed will approximate $500,000.—*Chemist and Druggist*, Feb. 8.

CEYLON TEA IN NEW ZEALAND.

FRESH DEVELOPMENTS.

After several months' touring not only in Ceylon but in India—Delhi and the North generally, as well as in Assam—Mr. M. S. Ridley, of Messrs. Ridley and Sons, Christchurch, went back to New Zealand by the Orient Pacific steamer "Orizaba," which sailed on 10th March. Mr. Ridley came to spy out the land, as it were,—largely in reference to Ceylon tea the future of which in New Zealand, as in Australia, he regards as holding a bright prospect. Our visitor, planters will be interested to learn, went back—one of the first to establish direct business, most tea for New Zealand being bought in the Australian market—having established a business connection with Colombo where his teas will be purchased and sent out to his firm in New Zealand. We have further the satisfaction of stating that Mr. Ridley intends to start a thoroughly Oriental Tea Kiosk at Sumner—seven miles from Christchurch, and the fashionable watering place of the neighbourhood—where New Zealanders will doubtless be more largely attracted to the article than hitherto. Mr. Ridley has already occupied part of the site and operations will be begun on his return. Later on, when our visitor returns to Ceylon after or before his approaching trip to Japan and the United States, it is probable that two (or more ?) native girls will be secured to be employed at the tea kiosk —to add the finish of it. Mr. Ridley has been most charmed with our Sanatarium, so much so that the coming addition to the attraction of Sumner, N.Z., is to be named, appropriately, the "'Nuwara Eliya' Ceylon Tea Kiosk"!

PEARLS AND PEARL FISHERIES.

DR. LYSTER JAMESON'S LECTURE.

The third of the series of lectures arranged by the Derby Technical College Committee was held in the Lecture Theatre on Friday evening. There was again a large attendance and the patronage given to the lectures by the local public must be a source of much satisfaction to the management committee, Indeed, there is every reason to believe that the recent prediction of Councillor J E Russell as to the success and popularity of the present series of lectures will be more than fulfilled. The subject selected on Friday night was "Pearls and Pearl Fishing," the lecture being delivered by Dr H L Jameson, M.A., a member of the College staff, who is recognised as a great authority on the subject. Colonel A Buchanan, J.P., presided, and he remarked that his duty of introducing to the audience Dr Jameson was a very pleasant one. The lecturer, having spent a considerable time in the Australian Pearl fisheries, was in a position to speak from a practical acquaintance with the subject. The chairman was glad to see so many ladies present, who, naturally enough, were very much interested in pearls and he hoped they, as well as the gentlemen present, would spend an interesting and pleasant evening. Dr H L Jameson, who had a very cordial reception, began by giving a brief survey of the pearls, in which he showed that they were highly prized, in the remotest days of which we have any written record, among the ancient people of India, China, Palestine and Egypt. He mentioned the extravagant passion for pearls which existed during the later epochs of the Roman Empire, and quoted instances of the wearing of pearls by primitive and barbarous natives in Polynesia and Papua, and by the Indians discovered by Columbus in Central America. Mother-of-pearl, which is the shell of the larger species of pearl oyster, is an important object of commerce, thousands of tons, ranging in value from £3 to £200 per ton being imported into England annually. Indeed, in some localities pearls are quite a by-product, the mother-of-pearl being the main object of the fishery. After an account of the internal economy of the pearl oysters, the lecturer dealt with their habits and mode of reproduction, referred to the possibilities of British river pearl fisheries if intelligently developed, and drew attention to the fact that the pearl oyster is computed to produce about twelve million eggs annually. Lantern slides, exhibiting pearls of various sizes and values, were next shown, together with microphotographs of their structure, while some of the most valuable pearls on record were mentioned, among them one purchased by the then living Shah of Persia from the traveller Tavemior, supposed to be worth £60,000. Dr Jameson then exhibited lantern slides and specimens illustrating the most important species of pearl oysters ; and went on to describe the methods of fishing adopted for the several kinds of shell in different parts of the world, dealing especially with the Australian and New Guinea fisheries, of which he has considerable experience. The last part of the lecture dealt with the future of the pearl aud mother-of-pearl fisheries. Dr Jameson explained that most of the pearl beds are in a sadly depleted condition, and that there is considerable danger of a decrease in the supply and increase in the cost of mother-of-pearl. He referred to the probable effect of the exclusion of alien labour from the Australian fisheries, and said that we might expect a serious falling-off in the supply of the most useful kinds of shell as the result. The only escape from the difficulty would be the application of intelligence and scientific skill, and the artificial cultivation of the pearl and mother-of-pearl oysters on lines somewhat similar to those adopted for the edible oyster in Europe. He described the various experiments that had been made in this direction from time to time, and referred to the researches of Professor Comba, in Italy, both in pearl shell cultivation and in artificial pearl production. The lecturer believes that both the cultivation of the oysters and the artificial production of pearls are among the commercial developments of the near future, and that they will revolutionise the trade in these commodities and mean colossal fortunes to the lucky individuals who are first in the field.—*Derby Express*, Feb. 15.

Uvakellie Tea Company.—A dividend of 7 per cent is in these times to be counted a very good result indeed. A substantial amount has also been carried forward to the reserve account.

THE "TEA CESS" AND HOW TO WORK IT.

A Manager, who was at one time for "doubling the Cess," writes on the 6th March:—"You have put the Cess matter plainly and fairly in your leader of the 4th and, barring your insistence that we should do nothing if India doesn't create a Cess, I am quite at one with you. We cannot in any way compel India to tax herself though she looks like doing it of her own free will at present; but if her scheme should fall through as per usual, are we to cease our efforts here? I maintain we must push our own teas for all we are worth with or without the co-operation of India and that our funds should be mainly used in subsidising '*green teas*' as suggested in my first letter which, if I remember rightly, originated all this row."

Paris, Feb. 11.—For those who dread the dentist's chair, even under the protection of laughing gas, a description is given by Dr d'Arsonval, of the Academy of Sciences, of a new use for electricity as an anæsthetic. The tooth must first be covered with a plastic substance, which the dentists use for taking moulds of the teeth. Then comes a layer of plumbago, and the whole is coated with a paste made with salt water. One electric pole is then attached to the tooth, and the other is held in the hand by the patient. The current is turned on, and produces the most complete local anæthesia, lasting ten minutes. An interesting account was also read of Gautier's experiments at the Constantine Hospital with the subcutaneous injection of methylarseniate of soda for malaria. A few centigrammes, injected daily, entirely checked the disease in several cases where strong doses of quinine had proved powerless after as much as two months' treatment.—*Morning Leader.*

A NEW CINCHONA DIRECTOR AT OOTY.

Mr. George Romilly, the well-known planter of Meppadi, Wynaad, has been appointed officiating Director of Government Cinchona Plantations, Ootacamund, *vice* Mr. W M Standen who has proceeded on leave.—*M. Mail,* March 12.

TOBACCO CULIVATION.

We know that many of our readers have been much interested in the information we were the first to publish, touching the opinion of a tobacco expert on the sufficiency of the leaf grown in the island, if only it can be properly cured. Mr. A Macdougall Gibson's opinion has come as a surprise to those who have long been taught to believe in the radical inferiority of Jaffna tobacco; and if his view, supported by experience extending over a score of years with tobacco in the East, stands the test of a searching experiment, there must follow a perfect revolution in the tobacco trade of the island. As we have noted before, Mr. Gibson holds that it is the curing, and not the leaf, that is at fault; and if his method should produce a leaf smokable by those used to Indian, Cuban and other acceptable brands, a great fillip will be given to the cultivation of tobacco by classes other than the Japanese. As evidence that there is money in the weed, we quote as follows:—

On the subject of Tobacco-growing in Burmah, from the report of the Department of Agriculture, just issued:—"The most successful result was obtained in Yandoon, Thongwa district. One pound of seed on the bank of the Irrawaddy produced 3,650 lb. of tobacco on 3·15 acres. In this sub-division the cultivation of tobacco is assuming important dimensions and efforts are being made to cure the tobacco. The Havana leaf is apparently not so appreciated as the Virginia. The price, however, obtained was higher than that for tobacco grown from local seed. In Bilin, Thanton district, half a pound of seed gave 125 viss, valued at R1 per viss. A small success was obtained in Monanauk Paingkyon. In Myitkyina 1,060 lb. of tobacco were obtained from about 1 lb. of seed and valued at R167. In other districts the experiments were generally a failure. Taze township seems suitable for its cultivation, and in Shwebo and in Ramree township, Kyankpyu and Rathedaung township, Akyab, some degree of success was attained. Generally, the experiments have failed from a bad selection of soil, or carelessness at the time of sowing and planting. The experiments were as a rule conducted on alluvial soil and there seems no doubt that the Havana or Virginia tobacco will grow as well as the local variety if it is properly cared for. Where it has been extensively successful the leaf is considered of better favour and texture than the local variety, and fetches a higher price."

THE CEYLON PLUMBAGO EXPORTERS, "COMBINE."

'GROUSING' IN THE LONDON MARKET.

From our earliest days we have come to look upon Ceylon as one of the most beautiful and magnificent places under the sun. Not only in school but also in church its praises have been sung, for who of us does not know that charming hymn—

"What though the spicy breezes,
Blow soft on Ceylon's Isle,
Though every prospect pleases,
And only man is vile."

In ancient times and at the present moment the "spice isle" has been regarded as a coveted spot, and writers of genius have been wont to identify it as the "Paradise Lost," full of beauty and untold wealth. No wonder, therefore, that many people have become accustomed to regard it as an ideal place in which even the "vile man" is a negligeable quantity. But those few among us who have had to do with the less poetical side of the beautiful island, who have had dealings in its produce, spicy and otherwise, and who have become acquainted with its Native commercial community, have lost a great deal of the original admiration and enthusiasm for that wonderful isle. In fact there are many, we are inclined to believe, who wish they had never heard the name, for although lovely, picturesque and fertile, it is also a land of great surprises. Its population, mixed as it is, is more shrewd and more cunning than any other dark race or tribe in India. They have long recognized that unity is strength and have frequently sprung upon us more

startling combinations, pools and cliques which have entirely upset the most careful calculations of the white commercial community in the East as well as in Europe. These combinations have comprised Spices, Drugs, and Oils, and all have in their turn cost us dear. Now, the latest attempt at screwing the European consumer is a combination of dealers and pit owners of Plumbago, which for its purpose has no other end than to arrest the steady decline of prices by refusing to sell their holdings below a certain level, the height of which has been agreed upon and to which all members of the clique have faithfully promised to adhere. As a result prices have advanced at a great rate and stand now several shillings above the range ruling just previously to the creation of the combination. To the satisfaction of all concerned, America and Europe have paid the prices demanded, a fact which only seems to make the members more pretentious, but they evidently overlook that even among consumers of Plumbago there are some nervous individuals and that so little important an article as Plumbago is not without its bear speculators, all of whom have still a vivid recollection of the extraordinary boom in 1900 and are therefore anxious to procure supplies and to cover at the least signal of danger. But to believe that these few buyers represent the Plumbago trade, or only a fair proportion of it, is a fatal error, which will be brought home to the combination shortly in a forcible manner. The Iron industry is bad everywhere, but particularly so in Germany, a large consumer of Plumbago, and there is still plenty left of the 24,000 tons exported to Europe and America last year to exclude famine prices. It would appear to us, therefore, that the natives have chosen a particularly inopportune moment for their move, and it is difficult to fathom the motive which prompted them to act, unless indeed it is the feeling that prices have been allowed to drop too low, and that something desperate had to be done to arrest them. Since 1895 values have not reached so low a level as this year, for the price of OIL was then R300, as against—

R.	325	in	1896
"	400	"	1897
"	600	"	1898
"	750	"	1899
"	900	"	1900
"	375	"	1901
"	300	"	1902

Although on that argument the attempt is not altogether without justification, yet its instigators should not have lost sight of the all important factor—"no demand owing to bad trade." When business is brisk a combination has a fair prospect of success, but never in bad times.—*London Commercial Record*, Feb. 14.

RUBBER GROWING is receiving the careful attention of the Senegal Government. Many plantations have been laid out at Casamance, and in the region of Mayes near the coast between Dakar and St Louis, where the soil is more favourable. Producers also are encouraged to prepare only the best qualities for the market.—*Rubber Journal.*

PLANTING NOTES.

RUBBER PLANTING IN MEXICO.—A useful letter on this topic appears elsewhere, which deserves the attention of rubber-planters—now an increasing number—in Ceylon.

ESSENTIAL OILS OF LEMON AND ORANGE.—Mr E J Sheehan, of Utica, N. Y., is the inventor of machinery that is stated to furnish a better means of extracting oil from orange and lemon than any hitherto used. Mr Sheehan is thinking of starting at Riverside, Cal., where he can find a plentiful supply of water power, convenient shipping facilities and plenty of fruit. *Chemist and Druggist*, Feb. 8.

TIMBER TREES OF CEYLON.—Mr. F. Lewis related many facts at the last meeting of the Royal Asiatic Society (Ceylon Branch)—some of which are reported elsewhere—of very great interest to the trading and planting community. He has brought to our office today four specimens of woods usually deemed quite common (keena, mee, cassiafistula, etc.), but so sawn as to take a French polish which turns them into very handsome cabinet woods. We trust Mr. Lewis will deal with this matter in a short separate paper, at a future meeting.

THE NEED OF TEA INSPECTION.—A planting correspondent says:—"What is done with caffeine? The firms in Colombo that buy red leaf and sweepings say they make caffeine of it. What is done with it after it is manufactured? Some Australians told us they bought tea in the Harbour which was labelled Pure Ceylon Tea and was utter rubbish. It would be interesting to know where this tea came from."—Nothing but inspection of all tea without responsible ("Directory") marks at the Colombo Customs will, so far as we can judge, meet the requirements of the case.

A NEW CURE FOR DYSENTERY.—Numerous applications from various parts of the world have been received by Mr H N Ridley, Director of the Botanical Gardens of the Straits Settlements, for seeds of a plant known as *Brucca sumatrana*, the seeds of which are said to be a specific for the cure of dysentery. It is a shrub with large leaves, with numerous leaflets, and is distributed over Borneo, Sumatra, Java, Philippines, South China and Australia. Specimens have been recorded from Perak and Pahang only. The plant is being propagated from seeds and it is hoped that in a few months seedlings will be ready for distribution.—*Chemist and Druggist*, Feb. 8.

EXPERIENCE THE ONLY SAFE TEST OF CLIMATE FOR TOBACCO.—Mr R S Nevill, Tobacco Expert of Queensland, says:—One must still judge, so far as the climate is concerned, mainly from the experience of others as to the class of tobacco to be raised, as the ordinary meteorological record will be of very little value in determining this point. The plant is far more sensitive to these meteorological conditions than are our instruments. Even in such a famous tobacco region as Cuba, tobacco of good quality cannot be grown in the immediate vicinity of the ocean or in certain parts of the island, even on what would otherwise be considered good tobacco lands. This has been the experience also in Sumatra and in our own country, but the influences are too subtle to be detected by our meteorological instruments.

ALOE FIBRE.

In November last there appeared in this journal a short article on the aloe fibre industry started by Mr. Tytler in the Madras Presidency, recommending him to increase his capital and bringing the business out as a company, and thereby give the public a chance of investing in a sound and profitable concern. We see by an article in the *Madras Mail* of the 16th December last that a company is being formed with this object by Mr Tytler, he having evidently taken our suggestion to heart. Mr Tytler will be remembered by many of our readers as the owner and rider of many good ponies in the days gone by, perhaps his best being the once famous Chorister. This new planting industry promises to be a god-send to indigo and other planters, and it therefore comes at an opportune moment, when planters generally are thinking of something in their own line as an auxiliary of the now much-depressed tea, coffee and indigo industries. It therefore behoves all planters in general to support Mr Tytler in his new undertaking, in their own interests and self-defence; for the success of the undertaking means that a new planting industry will be put before them, and that each and all will be able to learn the ins and outs of the business with its capacities, and form a basis to go upon for those who wish to follow his example. None need fear that bug-bear of all planters—over-production—for it will be a long time before India will be able to make any appreciable impression on the market, seeing that the present output from various countries is between £300,000 and £400,000 annually, and the demand seems to keep well ahead of the supply. So much is this the case that prices instead of showing a downward tendency have been steadily rising. There seems to be no doubt that both the Bahamas and Mexico have reached their maximum production. In these places it is not a question of land, though that is not over-cheap or in excess of the demand, but one of labour which is not only scarce and difficult to get, but exorbitantly high. Then, again, there is German East Africa to count with, which country is beginning planting; here land is certainly plentiful enough, but the quantity and cost of labour, as well as transport, is such that any appreciable fall in price will bring ruin to most planters; and further, they have to learn their business. The country that has cheap land and labour, and transport, both land and over the sea, so as to be able to produce fibre in the market at a minimum of cost, will eventually be able to outlive and oust other countries in this industry. India has nothing to fear in these respects, seeing that she fulfils the above conditions as regards land, labour and transport. She has, moreover, further advantages inasmuch as the plant grows to perfection in most parts of the country, and the results are in no way affected by good or bad seasons whilst the fibre produced by the plants has been pronounced to be superior to anything that has come from Mexico and the Bahamas. Taking all these facts into consideration, India will be the last to feel the results of over-production, should that stage ever be reached, which is very unlikely. The countries producing the worst fibre, and that at the highest cost, will be the ones to feel the pinch of bad times and will, most assuredly, go to the wall first. Whilst the results in tea, coffee and indigo are seriously affected by the seasons, a good or bad one making all the difference as to whether the result will show a profit or loss, the aloe plant laughs at a prolonged drought or bad seasons, so that the annual return can be calculated with almost mathematical precision. Quantity of fibre is everything and quality means strength, color, softness and length. The fibre prepared by Mr. Tytler has been pronounced to be superior to either Mexico or Bahamas fibre in general preparation and all the above-mentioned points; in fact, of such quality is this fibre that Messrs. Ide and Christie, the foremost London fibre brokers, state that it shows perfect preparation and could not be better, and that Mr Tytler deserves great credit for his system. These are most important facts. Mr Tytler, having thus successfully mastered the practical details of the business, deserves well of both the Indian Government and the investing public, as having successfully introduced a new planting industry to this country. An expert on aloe fibre, in the *Madras Mail* of the 30th August last, gives Mr. Tytler high praise both for his knowledge of the business and the quality of the fibre he has been producing. The company is to be congratulated in having secured the services of Mr Tytler as it ensures the succesful working and carrying on of the company's business. An article on the subject, which appeared in the *Pioneer* of 26th October last, is also worth reading. The company proposes bringing out its prospectus early in the year; this prospectus is highly spoken of by those who have seen it in draft form, both for its arrangement and fulness of detail. The capital will be R400,000, ensuring sufficient funds for carrying on the business properly, which is an important point. The prospectus shows that a profit of about 40 per cent will be made annually on its called-up capital during the first few years of its existence, until such time as the plantations it proposes planting out come into bearing, when the profits will be considerably increased and will go on increasing as the increased extent of the area planted comes into bearing. The company has secured on lease over 300 miles of aloe hedging; this is most important, as though only a stop-gap, it enables the company to work at a profit from its commencement instead of having to wait until its plantations should come into bearing: the leases secured are sufficiently long to more than cover the period that must elapse before its plantations come into bearing. Though, of course, the regularly planted plantations will be the mainstay of the company, yet the importance of having secured these valuable leases cannot be over-estimated. The present cost of production of the fibre landed in London will, according to the prospectus, be about R200 per ton which cost will be much reduced when the plantations come into bearing, so the delay in cost of moving from place to place, which is considerable when working along long lengths of hedging, will be saved. Even taking the above price, and allowing that the price of fibre does not fall below £28 per ton, which is the lowest price that it has reached during the past eighteen months, and that only twice, the profits over cost of production would show over R200 per ton, and more as prices go up. The average price during the above period was somewhere about £35 per ton, and Mr. Tytler's fibre fetched £32 10s per ton when other fibres were selling at a little over £28 per ton. The profits may, therefore, reasonably be expected to be greater, and as the company's hedging is capable of producing annually somewhere about 800 to 900 tons of fibre, the above figures show

clearly that the company is well within the mark with its figures as to the profits that may be expected. The company is probably one of the most promising and substantial undertakings that has been put before the Indian public, and is well worthy of the attention of investors. We do not anticipate that the share list will be long in filling up.—*Indian Planters' Gazette.*

[Experiments made in Ceylon by practical men, over which a good deal of money has been spent, do not make us so sanguine of success as our Indian contemporaries.—ED. *T.A.*]

THE WORLD'S PRODUCTION OF RUBBER.

AND THE FUTURE OF AMAZONAS.

The territory in the Amazon Valley from whence the largest portion of the world's rubber supply has, as yet, been obtained, is according to most reliable reports constantly decreasing in area. It is an undeniable fact that, owing to the extravagant method employed by the natives in gathering crude rubber, the natural source of supply has been, to a considerable sxtent, depleted, with the usual results attending. The risks, besides this, attending the gathering of the crop, especially in the Amazon Valley, are considerable. Heavy advances must be made to the improvident natives who depart into the limitless forests to remain for months with a chance, perhaps, never to return. The trees cannot survive the murderous butcheries of the native gatherers, whose sole aim consists in extracting the gum which is to pay the advances they received as quickly as possible, even if the death of the trees is involved. In order to reach the yet living and untouched trees, the native is compelled to travel deeper into the forests every year and the supply is maintained with increased difficulty with each successive season. These are facts, which sooner or later must become of the most serious consequences, respecting the economical conditions of the State of Amazonas, inasmuch as the production and exportation of rubber constitutes the almost exclusive source of revenue of that State. These circumstances and the fact, that there is scarcely a plant of equal value that responds so quickly to careful cultivation as the rubber tree, greatly stimulated other countries to develop this culture on a large scale, and it is from this quarter that Amazonas will experience the most dangerous blow to its heretofore commanding position as the world's supplies of rubber. Thus we learn from reliable sources that already in the year 1898 the value of exports of rubber from Africa alone amounted to 98 million francs. Angola, which contributed at that time to the amount of 28 million francs, is said to export now nearly twice this amount. The Congo State exported 16·8 millions ; Gold Coast 13·7 millions ; Lagos 7 millions and French Guiana 6 millions. The steady increasing production of the French Congo States and of Cameroon, as well as the Dutch possessions in India not counted !

THE TOTAL AREA UNDER RUBBER CULTIATION in Africa is estimated to be 4,000 square miles with a population much denser than in the Amazonas, no difficulty being therefore experienced to obtain a regular and efficient supply of labour. A considerable increase in the production of rubber is therefore to be expected without any doubt in the near future.

A very large amount of capital has within the last few years been invested in the rubber plantations of the Southern Mexican States. In years gone by the rubber industry of Mexico was already of considerable importance, but also in that country the improvident native method of gathering was fatal to the industry and the large returns dwindled as the number of trees decreased, until the export of native rubber ceased to be of much account—a warning example to Amazonas and to other countries where such abusive methods of gathering are practised ! The states of Tabasco and Chiapas, adjoining the isthmian region of Tehuantepec, have been the former sources of rubber supply in the Southern Mexican States. In soil, temperature, rainfall and other general conditions, these States possessed ideal qualifications for the cultivation of the rubber tree. The soil is the accumulation of long centuries of tropical decay, while the annual rainfall ranges from 150 inches and upward. The temperature required, hot and moist, is here found, while the dense shade which the rubber tree is said to need is afforded by the forests which abound in the extended valleys of the watercourses of navigable streams emptying into the Gulf of Mexico.

The fitness of these lands for the cultivation of the rubber tree has been remarked for many years, but the project seemed not to attract capital. The increasing scarcity of supplies together with an enormous development of demand, however, stimulated capital to invest, so that at present not less than 200,000 acres in the Tehuantepec provinces have been acquired, principally by Americans, who have invested 5,000,000 dollars in planting and development ! Reports from plantations in those provinces state that trees, five years old, had attained a diameter of from 8 to 10 inches, and yielded from 3¼ to 4¼ pounds of pure rubber each. Trees 6 years old were 10 to 11 inches and yield 4 to 5 lb, and 7 years 14 to 16 inches with a yield of 6½ to 8½ lb.

It will be seen by this rapid exposition that the production of rubber has for some time past been the object of no small efforts by all countries with possessions in tropical regions and as those efforts are supported by plenty of capital, and directed with method, enterprise and energy, the result cannot be doubtful :—a foreign production that will render the consuming markets, if not entirely independent of Brazilian production, at least reduce it to an almost negligeable quantity.

Tropical agriculture ceased to be exclusively limited to South America from the time that nearly every one of the European countries secured extensive possessions in the southern hemisphere. In proportion as the development of the colonial possessions of these countries advances, interchanges between these and the mother country will necessarily become more numerous, and as the product of these colonies is nearly similar to that of South America, a competition can be foreseen that cannot fail to seriously menace the future exporting trade of the latter, at least in similar products. This should be borne in mind by Brazilian agriculturists, who should direct their efforts to multiculture, instead of confining themselves to one product only, especially when that product is seriously menaced by a not distant competition.

We can therefore but agree with the timely warning raised by the *Provincia do Pará* against

the short-sighted system of mono-culture followed in the Amazonas, a warning which in our opinion applies not only to this, but to almost every, State of the Union.—*The Brazilian Review.* Jan. 21.

CRUDE RUBBER IN THE WEST INDIES.

According to the report of the Governor in Trinidad and Tobago rubber is the only new cultivation, which, as far as present indications go, is likely to prove a staple export in the future. It is, as yet, however, in a experimental stage. There are some eight plantations in Trinidad and two in Tobago. Several large sales of Crown land in Trinidad have been recently made on the understanding that they are to be devoted to this cultivation. It is also extending yearly in Tobago, chiefly in combination with cocoa. The rubber is chiefly planted is the Central American tree *Castilloa Elastica.* Of this sort there are 100,000 trees planted in Tobago, as well as some thousands of the Brazilian "Mouchet." The former promises to be the more profitable. The West African silk has also been recently introduced, and its importers are hopeful of its success. The greater part of the plantations are still quite young—from one to four years old—and no large return can be anticipated until they have been seven or eight years in existence. The quality seems to be good. A sample of Castilloa grown and prepared on Richmond estate was sent to England last year, and was valued by experts at 3s 6d per lb.—*India-Rubber Trades' Journal,* Feb 13.

PLANTING NOTES.

THE UPRIVER RUBBER COUNTRY—of the Amazon—may be in the backwoods, but it is the scene, nevertheless, of many phases of business enterprise. For example, the police of Manaos arrested recently two men who had in their possession 192,000 milreis in counterfeit money, with which they were proceeding to the river Purus to buy rubber. —*India Rubber World,* Feb. 1.

GUTTA PERCHA.—Monsieur de Jouffroy d'Abbans, French Consul at Singapore, who is very much interested in agricultural questions, writes that the extraction of gutta percha out of the leaves is not seriously enough taken into consideration. Everywhere in the Malay Archipelago and in Dutch India Government and private plantations of gutta percha trees have been established, and will be able in about four or five years to furnish all factories with leaves. The European factories, which treat the leaves in a chemical way, have at present still much to cope with the scanty supply of leaves. They will have to close their factories or start plantations themselves. Dr. Ledeboer's factory in Holland is, in spite of the big capital of this company, often short of leaves. Another factory exists near Singapore, but it has met with no success, for the expenses are too high, the factory being too far from the plantations. A small factory is in Pontianak and another in Sarawak, in Dutch Borneo, but both have the same difficulty in getting leaves. In short the future of this very important industry of extracting gutta percha from the leaves depends on the planting of sufficient trees.—*Journal d'Agriculture Tropicale.*

COMPANY MEETINGS.—The Horrekelly Estate Company has declared a dividend of 6 per cent for the past year, which we think very satisfactory on the whole. An interesting tabular statement is given of the working of the concern during 1899, 1900 and 1901. In the report of the Clyde Tea Estates Company testimony is borne to the favourable results of fine plucking. It has only been considered necessary to write off a nominal sum for depreciation and the customary provision has been made for deterioration in value of building. A dividend at the rate of 2½ per cent has been declared. The directors of the Agra Tea Company have not felt themselves justified in recommending a dividend in view of the greater portion of the profits having been spent upon a new extension to the factory and on new clearings, but a substantial addition has been made to the reserve fund.

TWO OR THREE YOUNG PLANTERS wanted for Blantyre, Nyassaland, forms the burden of a *bona fide* advertisement from the Company which appears in the *Ceylon Observer,* and the salary to begin with seems a fairly good one, seeing that the cost of living on the Company's estates, we are told, is not likely to exceed £50 a year, to a careful man. Some parts of Nyassaland have got an indifferent reputation for fever; but this Company's places are said to be healthy, and Mr. . S. Hynde, the Chief Manager, is an experienced resident. A drawback to young planters offering from Ceylon is that they are expected to pay their own passages from Colombo to Blantyre (just, we are told, as "creepers" and others pay their passage out to Ceylon), the salary of the men selected and who agree to go, beginning from the day they report themselves at Blantyre. The passage from Colombo to Chinde, the nearest port to Blantyre, we fear, could not be got far less than £35 (R525) second class or (£48 10s R727·50) first.

THE CEYLON PLUMBAGO MARKET—is the subject of a moderately amusing grumble on the part of London buyers, through the latest *Commercial Record*—which we quote on page 673. They complain of a combine amongst Ceylon native mine owners and exporters, not to sell plumbago below a certain price, and warn them that it is a most inopportune time for the move. The amusement comes in where the "screwing down of the consumer" becomes the subject of the writer's grousing. He appears completely to ignore the London attempts to screw down the producer—poor producer, we had almost said, but we have not noticed many bankruptcies among plumbago merchants yet!—by combinations in the Lane. The latter preceded the Ceylon move; and as to foreign buyers having met their requirements for some time to come—the signs do not all point that way. We have only just had an agent of a Pittsburg firm, which is said to buy something over 10 per cent of the Ceylon output, sounding the local resources, in view—we understand—of the evident profits being made by the trade in New York who are shipping from here direct. The demand is not so dead,

THE PALMERSTON TEA COMPANY OF CEYLON, LIMITED.

REPORT OF THE DIRECTORS.

ACREAGE OF THE ESTATE.

	Queensland. acres.	Palmerston. acres.	Total. acres.
Tea in Bearing ..	254	205	459
Young Tea ..	4	0	4
Total Tea ..	258	205	463
Jungle ..	19	0	19
Timber ..	0	7	7
Grass, &c. ..	4	0	4
Total Acreage ..	281	212	493

The Directors have now to submit their Sixth Annual Report and Accounts, being those for the year ending 31st December last. The yield of tea during the period has been 206,189 lb., costing cts. 28·88 as against cts. 26·74 last year, and realising cts. 44·10 as against cts. 44·17.

As will be seen from the accounts, the profits for the year, including the sum of R1,627·21 brought forward from last account, amount to R21,901·72 after writing off the sum of R2,470·09 for depreciation on Factory and Machinery. An interim dividend of 2½ per cent. was paid on 12th August, absorbing R10·250; and the Directors recommend that a final dividend of 2½ per cent be declared, making a total of 5 per cent for the year, and leaving a sum of R1,401·72 to be carried forward.

In terms of the Articles of Association, Mr. G C Alston now retires from the Board, but is eligible for re-election.

The appointment of an Auditor for the current year rests with the Meeting.

THE UVAKELLIE TEA COMPANY OF CEYLON, LIMITED.

REPORT OF THE DIRECTORS.

The Directors have now to submit their Report and Accounts for the year ending 31st December, 1901.

The crop amounted to 166,319 lb. Tea costing 26·29 cents per lb., against 162,110 lb. costing 26·95 cents in 1900.

The amount of profit earned is R20,744·93, which is equal to fully 8½ per cent on the Capital of the Company.

After estimating the unsold Tea at a safe figure, the crop has realized 39·99 cents per lb., against 43·39 cents in 1900, and 41·67 cents in 1899, the lower price being due to the fall in the market.

After adding R719·26 surplus proceeds of Tea estimated last year and R597·15 balance brought forward, the profit amounts to R22,061·34 and after writing off 7½ per cent for Depreciation on Buildings and Machinery the amount available for distribution is R20,023·46, which the Directors recommend should be disposed of as follows :—

By the payment of a Dividend of 7 per cent absorbing	R16,800·00
By carrying to Reserve a sum of ..	2,000·00
By payment of a Bonus to Superintendent of	500·00
And carrying forward the Balance of	723·46
	R20,023·46

The estimate for the current year is 165,000 lb, Tea to cost R48,588·50.

During the year Mr F W Bois resigned his seat upon the Board, on leaving for home, and Mr H G Bois was elected to fill the vacancy.

In terms of the Articles of Association Mr Bois now retires from the Board, but being eligible offers himself for re-election.

It will be necessary to appoint an Auditor for 1902.

CEYLON PLANTERS' RUBBER SYNDICATE LIMITED.

REPORT OF THE DIRECTORS.

Acreage :

The Acreage of the Syndicate's property is as follows :—

Opened Land	615	Acres
Reserve	269	,,
Total ..	884	

At the 31st of December, 1901, 615 Acres had been felled of which :—

544 Acres were Lined	253 Acres were Supplied
550 ,, ,, Holed	414 ,, ,, Filled in
350 ,, ,, Planted	585 ,, ,, Cleared up

Only 350 acres have been planted owing to the plants being too small to put out. Had the seed purchased from Culloden Estate turned out well, the whole area might now have been planted up. One block of 45 Acres accidently caught fire, before it was ready to burn off. As the clearing up would have been costly, and there were no plants available for putting ont, our Manager considerd it best to allow the undergrowth to grow up and clear and burn again in March or April.

Catch Crops have not proved a success, though the pumpkins seem to have grown well enough. The price obtainable was so low that it did not pay to pick them and the Chinese cultivators went off without clearing the land. Your Directors think that none of the usual catch-crops should be planted, with the exception of Liberian Coffee, which our Manager considers will pay a good return without injuring the Rubber. Whether this be planted or not rests with the Meeting. Mr Darby estimates that 200 Acres can be planted with Liberian Coffee, 7½ by 7½, and brought into bearing by 1905, for $900,000 or R13,500,/- giving at the end of that year a gross return of the value of R20,000/, the Rubber in this 200 Acres to be planted 15 feet by 30 feet.

Copies of Mr Carey's Report have been sent round to all the Members of the Syndicate, also of Mr Kelway Bamber's Report on the Pendamaren soils, which was most satisfactory.

A new Director and Secretary will have to be appointed in the place of Mr H C Harrison who is leaving the Island.

As Funds are insufficient to carry on the work of the Estate, until the Rubber trees begin to bear, it is proposed to raise the nominal Capital to R250,000/- and during the Autumn to raise 80 new shares at par to existing Shareholders in proportion to their holdings.

	R.	c.
Expenditure to date is ...	97,881	11
Estimated Expenditure for 1902, Rubber alone	22,667	00
Estimated Expenditure for 1902, Provision for Coffee	7,725	00
Estimated Expenditure for 1903, Rubber	18,289	00
,, ,, ,, Coffee	600	00
,, ,, 1904, Rubber	19,826	00
,, ,, ,, Coffee	450	00
,, ,, 1905, Rubber	16,729	00
,, ,, ,, Coffee	4,500	00
	R188,667	11

From the beginning of 1906 the Estate should be self-supporting. The estimated profits on Coffee being sufficient to carry on, from that date, until the Rubber trees give their first yield.

February 20th, 1902.

THE CASTLEREAGH TEA COMPANY, OF CEYLON.

THE REPORT OF THE DIRECTORS.

The directors submit herewith the balance sheet and profit and loss account for the year ending 31st December 1901, duly audited.

The balance of profit (including a debit balance of R54·65 brought forward providing for depreciation of buildings and machinery as shewn in the accounts) is R22,012·54. Of this sum R7,200, has been absorbed in paying an interim Dividend at the rate of 3 per cent. TheDireotors propose, after placing R551·67 to Reserve Fund, being 2½ per cent, on the Profits, as resolved on in General Meeting, to declare a further Dividend at the rate of 5 per cent payable on the 11th March, absorbing R12,000 and after paying a bonus of 5 per cent on the profits divided inclnding Reserve Fund, for the year to the Superintendent. in terms of a promise made to him, absorhing R987·58 to carry forward to 1902 accoant R1,273·29.

The total tea crop was 182,272 lb. against the estimate of 200,000 lb. The cost of the tea delivered to buyers was 25·03 cents per lb. or 23·67 cents exclusive of provision for depreciation of buildings and machinery or 21·95 cents exclnsive of both depreciation and manuring. The tea was sold locally realising 38·62 cents per lb. leaving balanoe of gain 14·95 cents. Cost in 1900 was 23·43 cents and value 37·02 oents per lb.

The Company's property consists of :—

430	acres tea nnder leaf.	Yield in 1901, 424 lb. per acre.
7	„	planted in 1897 and 1898.
24	„	ravines, scrnb roads, etc., in the eight tea fields of the estate.
57	„	jungle, jungle belts and swamp.
518		

The estimated crop for 1902 is 200,000 lb. tea or 458 lb. per acre from 437 acres.

It will be seen that the property representing capital now stands in the balance sheet at approximately R547·00 per acre cultivated and that the profit per acre is R50·00 as compared with R48·00 in 1900 and R60·00 in 1899, the profit upon capital being 9·19 per cent or including the snm reserved against depreciation 10·21 per cent.

Mr R Huyshe Eliot retires from the Board by rotation and eligible for re-election.

The Shareholders will be requested to elect a Director and also an Auditor for the cnrretn year

THE HORREKELLY ESTATE COMPANY. LIMITED.

REPORT OF THE DIRECTORS.

Managing Director.—Mr. C E H Symons. Directors :—Messrs. F J De Saram, Stanley Bois, F W Bois and Hon. F C Loos. Secretaries :—Messrs Lewis Brown & Co.

The Directors have pleasure in snbmitting the accounts of the Company for the year ending 31st December, 1901, shewing, after writing off R6,011·43 for depreciation on Bnildings, Plant and Machinery, a profit of R23,231·71, which, with the balance of R1,667·80 brought forward from 1900, gives a total of 24,899·51 available for distribution.

The Directors recommend that a dividend at the rate of six per cent on the Capital of the Company be declared. This will absorb R24,000,—and leave a balance of R899·51 to be carried forward to 1902.

The working of the estate for the years 1899, 1900 and 1901 compares as follows :—

	1899. R. c.	1900. R. c.	1901. R. c.
Expenditnre on Estate and in Colombo office ...	36,754 67	35,761 59	39,756 93
Number of Coconnts prodnced	1,305,429	1,502,298	1,439,218
Quantity of Coir Fibre made Ballots	28,324	22,592	24,876

Two Directors—Messrs. F C Loos and F J De Saram, retire by rotation, and are eligible for re-election.

The Shareholders have to appoint an Auditor for 1902.

The cnrrent year's prospects are favourable.

THE CLYDE TEA ESTATES CO., LTD.

THE REPORT.

Directors :—Mr F M Laurie, Mr E D Harrison, Mr Robt. Davidson ; Agents and Secretaries : Messrs Lewis Brown and Co.

ACREAGE :

Tea above four years old	546 acres.
Jungle, &c.,	169 „
Total	715 acres.

Your Directors beg to submit their report and the accounts for the year 1901.

The qnantity of tea made was .—From estate leaf 162,423 lb and from bought leaf 8,196 lb against original estimates of 190,000 lb and 10,000 lb respectively. The shortage on estate estimate is due to the unfavourahle season experienced, and to the careful system of plncking in force from early in the year.

The expenditnre on manuring during the year (R1,997·92) has been charged against revenue as have also sundry items on extensions, &c. amounting to R560·24. The cost of estate tea exclusive of these, bnt inclnding transport to Colombo, and selling charges was R40,930.07, or say 25·20 cents per lb. The average price realised for the whole crop was 31·32 cents per lb.

The amount at debit of machinery is R21,614·73, against which snms aggregating R9,643·67 have already heen provided for depreciation. In view thereof the Directors do not consider it desirable to meantime continue writing off depreciation on the usual basis, and have set aside only a nominal sum of R540·37. The customary provision has been made for deterioration in value of bnildings.

Including the balance of R2,543·13 brought forward from last year, the snm now available for distribution is R7,249·89, from which the Directors recommend payment of a dividend at the rate of 2½ per cent. This will absorb R6,750.—and leave R499·89 to be carried forward.

In terms of the articles of Association Mr R Davidson retires from the Board, but is eligible for re-election.

The shareholders have to appoint an Auditor for 1902.

THE KIRKLEES ESTATE COMPANY, LIMITED.

Directors.—Hon. Mr W H Figg, Messrs. G H Alston and John Gordon. Estate Superintendent,—Mr J Armitage Ogden.

Acreage : 31st December, 1901.

Tea in bearing ..	380 acres
Do partial bearing ..	35 do
Tea not in bearing ..	33 do
Timber & Cardamoms, about	122 do
Grass & uncultivated land	147 do
Total ..	717 acres

The Directors have now to submit to the Shareholders the accounts of the Company for the yast year.

The crops secured amounted to 125,525 lb. Tea, in addition to 8,386 lb. manufactured from purchased leaf, 12¼ bushels of Coffee and 2,523 lb. Cardamoms. The nett price realised for the Tea was 34·18 cents per lb., as against 33·49 cents in 1900, while the Cardamoms already sold have realised R1·10 per lb. nett. The shortfall in quantity of Tea crop secured is due to finer plucking, rather too lenient treatment of the bushes, and insufficient rain during the months of October, November and December.

After making due provision for depreciation of Buildings and Machinery and paying the 7 per cent. dividend on the Preference Shares, the profit for the past year amounted to R1,248·39 to which has to be added the balance of R3,625·45 brought forward from 1900. From this total of R4,873·84 a sum of R173·57 has to be written off for amount short realized for sale of produce estimated for 1900, and the Directors have decided to set aside a sum of R500 to a Coast Advance Reserve Account, and to write off the sum off R1,223·80 expended on Capital Account in 1897 on a trace for a new road, as there seems no prospect of the road being constructed. The Directors now recommend that out of the available balance of R2,976·47, a dividend of 2 per cent. be declared and that the balance of R976·47 be carried forward to the current season's account.

The estimated crops for this year are 160,000 lb. Tea and 3,000 lb. Cardamoms, on an expenditure of R44,215.

In terms of the Articles of Association, the Hon. Mr W H Figg now retires from the Board, but is eligible for re-election.

The appointment of an Auditor for the current year rests with the meeting.

By order of the Directors,
Whittall & Co.,
Agents & Secretaries

Colombo, 12th Feb., 1902.

AGRA TEA TEA COMPANY OF CEYLON.

ANNUAL REPORT.

Directors:—Major E F Tranchell; Joseph Fraser, Esq.; John K Symonds, Esq.

The Directors have the pleasure of submitting their Report for the year ending 31st Dec. 1901.

The acreage of the Company's property is as under:–

Tea in full bearing	313	acres
Tea in partial bearing	8	do
Tea not in bearing	15	do
	336	do
Forest	21	do
Grass, waste land, &c.	10	do
Total area	367	acres

The estimated Crop for 1901 was 200,000 lb, and the actual quantity realised was 197,823 lb, or a deficiency of 2,177 lb. This crop realised R78,426·19, equivalent to 39·64 cents per lb, as against 39·33 cents in 1900. The expenditure, as shown in the accompanying accounts, was R57,181·72, or nearly 29 cents per lb against 28 cents in 1900.

After deduction of R4,000 for Depreciation on Buildings and Machinery, the profit on working account for the year amounts to R16,713·36, representing about 4 per cent on the value of the property as shown in the Balance Sheet.

After payment of Interest on Loans, viz., R5,993·99, the net Profit for the year amounts to R9,156·97, to which has to be added the sum of R495·91 brought forward from 1900, bringing the balance at credit of Profit and Loss account up to R9,652·88.

During the past year the sum of £1,000 has been paid to the Standard Life Assurance Co., in reduction of the mortgage, which now stands at £6,000. The Directors do not feel justified in recommending a Dividend at the present time, for the greater part of profits earned has been spent upon a new extension to the Factory, and on New Clearings. Moreover, it was necessary to obtain a temporary loan of R3,500 at the time that the instalment was paid on account of the mortgage. They therefore propose to transfer R6,000 to the credit of the Reserve for Extensions, thus bringing total of that Reserve up to R30,000, and leaving R3,652·88 to be carried forward to next year's accounts.

The estimated crop for 1902 is 200,000 lb of tea to be produced at 28 cents per lb, which includes a fair allowance for manuring.

In terms of the Articles of Association Mr John K Symonds retires from the Board of Directors, but is eligible for re-election.

The appointment of an Auditor will rest with the meeting.

THE ESTATES COMPANY OF UVA, LTD.

THE REPORT,

Directors.—Messrs W D Gibbon, G H Alston and R S Templer. Estate Inspector:—W D Gibbon. Estate Superintendent:—Dammeria: J B Cotton. Battawatte: A V Ryall. Gampaha: F J Whittall.

Acreage: 31st December, 1901.

	Tea in full bearing.	Tea in partial bearing.	Tea not in bearing.	Total Tea.
Dammeria Group	575	—	29	604
Battawatte and Forest Hill	413	178	—	591
Gampaha	454	120	33	612
Total	1,442	298	67	1,807

	Other Products.	Timber, Grass, Forest and Waste Land.	Total.
Dammeria Group	30	556	1,190
Battawatte and Forest Hill	—	164	755
Gampaha	45	209	866
Total	75	929	2,811

The Directors now submit to the Shareholders the accounts of the Company for the past year.

The following were the crops secured; 627,094 lb. Tea; 54 cwt. Cocoa, 25 bushels Coffee and about 240 lb. Cardamoms, while 92,746 lb. Tea were manufactured for other Estates. The average nett price realized for the Tea was 36·62 cents per lb., against 34·60 in 1900.

After providing for depreciation of Buildings and Machinery, the nett profit for the year amounted to R33,470·51, equal to 4.71 per cent on the Capital of the Company, to which falls to be added R8,968·13, being the balance brought forward from 1900 less a sum of R13 over-estimated for Tea unsold at the end of that year. The Directors have decided to write off R1,298·70 the cost of a survey made in 1897 for a proposed road, as there seems little prospect of its construction being carried out, and to add to the Extension Fund the sum of R10,000, which will form a nucleus of a fund for redemption of the mortgage. There is then available for distribution a sum of R31,139·94, and the Directors now recommend the payment of a dividend of four per cent for the year, and that the balance of R2,719·94 be carried forward to the current season's account.

Expenditure on Capital account during the past year amounted to R9,787·25, which was spent on the erection of an assistant's bungalow and the addition of withering fans on Dammeria, the upkeep of tea not in bearing, and in the instalment due on the construction of the Battawatte Road, on which there is now only one more instalment of R2,540·52 to be paid in July this year.

The estimates for the current year provide for an expenditure on working account of R193,080·18 on crops of 690,000 lb. tea 60 cwt. cocoa and 500 lb. cardamoms, while, besides the instalment due for

the Battawatte Road, it is anticipated that an expenditure on capital account of R8,981 will be required for additions to machinery and upkeep of a small acreage of tea on Gampaha not yet in bearing.

Messrs. H Cumberbatch and W H Figg having resigned their seats on the Board, the vacancies were filled by the appointment of Messrs. R S Templer and G H Alston. In terms of the Articles of Association Mr W D Gibbon now retires, but is eligible for re-election.

The appointment of an Auditor will rest with the meeting.—By order of the Directors, WHITTALL & Co., Colombo, February 19th, 1902. Agents and Secretaries.

THE DRAYTON (CEYLON) ESTATES COMPANY, LIMITED.

REPORT OF DIRECTORS.

The Directors beg to submit a duly audited statement of the Company's accounts for the year ending 31st December, 1901.

After making provision for Depreciation of buildings and machinery, and setting aside R2,000·00 as a reserve against bad debts. the profit earned for the year amounts to R69,964·57, equal to rather over 9½ per cent on the paid up capital of the Company. An interim dividend at the rate of 3 per cent was paid in October last, absorbing R21,450·00, thus leaving a balance of R48,514·57 more to be dealt with, to which must be added the sum of R3,055·85 brought forward from 1900. The Directors propose the payment of a final dividend of five per cent, making 8 per cent for the year, and that the balance R15,320·42 be carried forward to the current year's account.

The crop secured from the Company's Estates amounted to 567,863 lb., being 11,017 lb. more than the crop of 1900, which is equivalent to a yield of 422 lb., per acre, and is a satisfactory increase, considering the season.

The cost of production of the 567,863 lb. of Tea delivered in Colombo was 27·60 cts. per lb.

The nett price realised was 40·74 cts. per lb.

Upwards of R1,360·47 was spent on new Pine Boarding Tats, Tea, Bins, and the erection of new lines all of which expenditure has been charged to working account.

The Buildings on the Company's Estates are now all in good order, and should require very little expenditure on upkeep for some time to come.

In view of the probable sale of Yuillefield, the Company are acquiring the necessary powers to enable the sale to be completed and are also applying to the Court for leave to reduce the Capital of the Company.

The lease of Cwm Estate has expired. and, the Directors do not propose renewing it.

Since the last general meeting Mr V A Julius has been elected director in the place of Mr F Lieisching. In terms of the Articles of Association Mr Figg retires from the Board by rotation.

The appointment of an auditor for the current year rests with the meeting.

VOGAN TEA COMPANY OF CEYLON.

DIRECTORS.—Messrs. R W Harrison, V A Julius, E M Shattock.

The Directors now beg to submit to the shareholders their report and accounts for the year ended December 31st, 1901.

The total crops secured for the year have been as follows:—

Vogan	223,667 lb	as against	319,477 lb	in 1900.
Iddagodde	110,781	,,	142,922	,,
Bought leaf	15,383	,,	20,268	,,
Stamford Hill & Barkindale	82,640	,,	107,474	,,
	432,471		590,141	

Estimate of crop on Vogan and Iddagodde was 410,000 lb based on a finer system of plucking than was in vogue during 1900. The crop secured, was, as will be seen above 75,552 lb short of the estimate, this being due to the extremely unfavourable weather for flushing which prevailed during the greater part of the year, more especially during November and December, in which months only 46,959 lb of Tea were secured as against 97,035 lb during the same two months of 1900. This large shortage of crop has brought up the cost of the Tea to 26·62 cents per lb. while the net average price realised has been 32·23 cents.

On Stamford Hill and Barkindale the crop has also fallen short of the estimate to the extent of 17,360 lb., the total amount secured being 82,640 lb which has cost, after the deduction of the profit on manufacture of outside leaf, 29·90 cents per lb to lay down in Colombo, and has realised a net average price of 42·20 cents per lb,

After payment of the interest on Debentures, viz: R5,565, the amount of profit earned is R19,783·17, to which must be added the balance of R336·93 brought forward from the previous year, making a total of R20,120·10 available for distribution. Of this amount, the Directors recommended that the sum of R2,000 be put to Depreciation Account, and, that a dividend of 2½ per cent absorbing R18,000 be paid leaving a balance of R120·10 to be carried to next account. In view of the fact that the Factories on Vogan and Stamford Hill are built of brick and iron respectively and that all repairs and renewals are charged to working account, it is not considered necessary to put a larger sum aside for depreciation.

Considerable attention is being paid to the cultivation of Rubber on Vogan and Iddagodde, and during the year some 5,000 stumps will be put out on suitable land. It is hoped that, in time, this together with what has been planted in previous years will form a most valuable reserve for the Company, and every effort will be made in this direction.

The acreage of the Company's properties is as follows:—

VOGAN AND IDDAGODDE.		A.	R.	P.
Tea in full bearing	...	666	3	33
Tea in partial bearing	...	119	0	10
do under two years	..	25	0	0
Jungle do	..	515	1	38
STAMFORD HILL AND BARKINDALE				
Tea in full bearing	..	220	0	0
Total Acreage	...	1,548	2	1

In terms of the Articles of Association Mr V A Julius retires from the Board of Directors, but being eligible offers himself for re-election.

It will also be necessary to appoint an Auditor for 1902.—By order of the Directors,

LEE HEDGES & Co., Agents and Secretaries.

Colombo, March 2nd, 1902.

THE INDIAN FIBRE CO.

The prospectus of this Company has now been issued. The capital of the Company is R4 lakhs, in 4,000 shares of R100 each, of which the vending Syndicate receives half in fully paid up shares, so confident is it of the soundness of the concern and of the prosperous future before it. Mr. F W Tytler is the head of the Syndicate, and the Company is to have the benefit of his services, so that, as the prospectus states, it "would thus start work with assured supplies of raw material, the most approved machinery, cheap labour, and experienced management, and can confidently rely upon a constant demand for its produce at prices which must under ordinary circumstances leave a handsome profit."

There is one fact which will strongly appeal to prospective shareholders, and that is that the Company will be in the fortunate position of being able to declare a dividend in the first year, and one which may range from 30 to 46 per cent. on a called-up

capital of R320,000. The proof of this excellent pudding will be found in the prospectus, in which it is set forth that, taking the selling price of the fibre at only £30 a ton—and it has been as high as £44—and a production of only 720 tons a year—whereas 900 tons, it is estimated, might be made from the hedging only—the net profit on the year's working will be R1,47,600. The fibre is certainly excellent, it has been very highly spoken of by experts in London, where it has realised the top market price, and at the recent Agri-Horticultural Show in Madras it was awarded the Bronze Medal (the highest award for fibres) the Judges regarding the exhibit as "a very beautiful sample." Thus, everything combines to render the issue of the prospectus an assured success.—*Madras Mail*, March 8.

A NEW TEA COMPANY.

THE AGRA ELBEDDE (CEYLON TEA) ESTATES, LIMITED.

Subscription lists were to open in London on February 17th and close on or before Wednesday, February 19th, at 4 p.m., for the above Company to be formed with capital of £45,000; 15,000 being £6 per cent. Cumulative Preference Shares of £1 each and 15,000 each of "A" and "B" shares of £1 each, "B" shares getting a dividend up to 6 per cent. after providing the dividend on "A." The Directors are Messrs. S Patterson, J. P., Chairman, J W Hargreaves, J Puttfarcken, J D Hand, and R S Pieris, Managing Director. The Company has been formed to take over as a going concern from January 1st 1902 the Agra El bedde and Agra Tenne Estates in Ceylon in Agras and Badulla districts respectively. The total area under cultivation is 426 acres and there are "650 acres available for extensions." The present output is 100,000 lb per annum. Mr. Edmund Scott, who has reported onboth estates, estimates 144,000 lb. for Agra Elbedde alone, in 1905. The Secretary of the Company is Mr. E H Walker, and offices (*protem.*) 25, Abchurch Lane, London, E. C.

PLANTING IN THE ANAMALAIS.

Mr. E J Martin, formerly on Farnham, Kelani Valley, whom we welcome back on his return to the colony (by the "Konigin Luise") after 16 months' absence, proceeds to take partial charge of Elkaduwa, Wattegama, pending the development of his own property, Monica, in the Anamalai Hills. On Monica Mr. Martin has 250 acres of tea, a large quantity of cardamoms and experimental plantations of rubber, cinchona, &c; some of the tea comes into bearing next year. The Anamalai Hills is shortly to be served by a light railway from Coimbatore to the foot of the Ghauts and even now has a cart road right though the district, though it is but 3 years since the first clearing in it was made.

SNAKE FOSSIL FINDS.—The Geological Survey of Cape Colony has found fossils in the cretaceous beds of the coast near Natal. One is the lower jaw of a large reptile or snake allied to the mosasauras, and another part of the carapace of a turtle such as the protosphargis.—*Natal Mercury*, Feb. 21.

"THE CEYLON TEA KIOSK."

AN IMPORTANT DEPARTURE IN THE INTEREST OF CEYLON TEA.

We make an announcement elsewhere which should interest planters everywhere throughout the island as likely to prove of the utmost benefit to the staple industry of the country, from the prominent notice which it is bound to bring to our tea among the higher classes in England, and (indirectly) in the Continent and America. The "Ceylon Tea Kiosk" of Grafton Street, fully described in this issue, should attract considerable attention in London from its commencement in this the Coronation year, and we understand that—if successful, and we have little doubt that it will be, in contrast with many of its butterfly sisters which have faded away in the same West-end—a similar room will be opened at Paris before long, and after that, perhaps within the next two years, other Ceylon "Kiosks" will be started in the leading provincial towns in England. A good start is a great matter in opening such an institution as that which is to find its home in Grafton Street, and we have no doubt that the enterprising Syndicate, on whose behalf Mr. Saunders will be working when he goes home on April 7th, will be satisfied with patronage little short of anything but the very best. Of course H. E. Sir West Ridgeway will be at home and in London, in time for and at the time of the opening and we hope may be present. We wonder if it would not be possible, indeed, to secure the good offices of a lady of royal birth for the performance of the opening ceremony. Such an one has only recently visited our shores, with her spouse, and for their household while in our midst it will not be forgotten that Mr. Wm. Saunders was the much appreciated Comptroller-General. If the "Ceylon Tea Kiosk" were to be opened by the future Queen of England, not only would its success be further assured, but—a matter of greater import to Ceylon tea generally—attention to the tea exported from the first of Crown Colonies would be widely and speedily drawn, with increased intensity, not only in every quarter of the United Kingdom but all over the Continent wherever the doings of our Royal family are watched with absorbed interest. The prospect is one which, on behalf of the Colony generally, we earnestly hope may be realised.

NEW YORK, Wednesday, Feb. 19.—Mr Edward Harriman, who heads the syndicate controlling 20,000 miles of railway in the western states, is about to launch the greatest colonising scheme on record. He proposes to engage a corps of lecturers, with biographs and stereopticons, to advertise the mineral, industrial, and agricultural resources of the states traversed by the syndicate's railway lines. Colonising agents will follow the lecturers and arrange to give prospective settlers cheap transportation. Emigration agencies have already been established at Hamburg, Paris, Genoa, and other European cities, where lectures will be given and the great colonising scheme vigorously boomed.—*Daily Mail.*

Correspondence.

To the Editor.

RUBBER PLANTING IN MEXICO—AND DEVASTATION OF ORIGINAL TREES IN SOUTH AND CENTRAL AMERICA, &c.

Vera Cruz, Mexico, 20th Jan., 1902.

SIR,—I receive the *Tropical Agriculturist* regularly from our home office in Chicago; and although I take all Tropical Agricultural papers that I can get hold of, there is none I prize more than yours.

I noticed a short article about Castilloa Elastica, growing from cuttings, &c. Here we have not found that mode of planting answer as well as by plants. The trunk of the tree does not appear to grow as *healthy* and *robust* as from seed.

I think the Castilloa Elastica one of the easiest of propagating plants ever grown in the tropics. Here we plant from the nurseries, as well as planting seed at stake; last season we planted about 160 acres at stake, and I do not think there are 5 per cent of failures.

Great care must be taken that the rains are *well on* before planting at stake is undertaken, or it may have to be done over again. We have orders to plant 1,500 acres in the coming season, of which 500 acres will be planted at stake. Last season we put two seeds at stake, one on each side; this season we will plant four seeds in each place, then we will not have any loss at all; in fact, we expect to have several thousands to transplant. In the past season we got between eight and ten thousand bushels of corn from our rubber fields, and the second crop is now in tassel. I can't say how much we will get, but there is every chance of getting 4,500 bushels at least. We have also the 160 acres, we planted at stake planted in beans, from which we expect; several hundred bags; these catch-crops are very valuable to us, as our people eat nothing but corn, beans and beef.

Rubber is having a great boom here on the Isthmus of Tehuantepec, but the area is not very large where rubber can be grown profitably. I do not think there are as many trees planted, as are destroyed yearly, in tapping. The present rate of destruction is terrible, both in South and Central America, as well as in East and South-East Africa.

JAS. MAUNDER.

PEARL OYSTERS AT TRINCOMALEE.

Harbour Road, Jan. 27.

DEAR SIR,—Since my last communication to you *re* Pearl Oysters at Trincomalee, I have been endeavouring to gain as much information about their appearance as I possibly could, particularly among the fishers of the sea, whose avocation takes them to the numerous fishing grounds, bays and creeks of our coast; and I learn from some old hands that Dr. Kelaart, while in military charge here in the early part of the fifties, introduced some fresh spawn of the pearl-yielding mollusc from Aripu, and deposited them at different points in Trincomalee, near "Powder Island," by the dockyard, "Crow Island" by Orr's Hill, at Koddiyar bar, and near Kurritivu, between Foul Point and Koddiyar, and that the oysters now found are their yield. That during the months of February and March, when the S W and sea breeze blow alternatively in a day, and during lull, large beds of pearl oysters can be observed at Sami Rock point off Fort Frederick, in six fathoms of clear water.

The natives say that hitherto there have been no pearls found; but when oyster beds are torn and carried away by strong currents and cast ashore, the oysters, both small and mature, are collected by ignorant women searching for cockles and mussels, who use the fleshy body as food, a good many pearls are perhaps thrown away with the careless washing before the cooking. The fishery in Kinniyai Bay, formerly rented out by Government, has been abandoned for many years.—Yours faithfully,

J. B. COLOMB.

[We have handed to Professor Herdman the oyster shell and pearl Mr. Colomb sent with his last letter. Trincomalee, as already mentioned, will be visited in due course and a careful investigation made of all that concerns local fisheries and oyster deposits.—ED. *T.A.*]

"A BUCHAN FARMER" SCRUTINEERED.

[There never was a press writer who was not subject to criticism and correction, and "Cosmopolite" is far too genial an old Colonist not to be willing that his readers should hear "the other side" as it is given by another old Ceylon planter and Aberdeenshire farmer in the *Buchan Observer*.—ED. *T.A.*]

SIR,—In your issue of last Tuesday I read with some little interest 'Cosmopolite's' letter to you and copy intended for *North British Agriculturist*. I have also been put in possession of the *Tropical Agriculturist* of Ceylon, where the letters appeared, and I am quite sure your numerous readers in Buchan and elsewhere would be gratified if you would reprint them without garbling. In that case, the prayer of Robbie Burns would be in a measure answered—

'O wad some power the giftie gie's,
To see ourselves as ithers see's,' &c.

As 'Cosmopolite' says, 'all know perfectly well his real name;' indeed who does not know the author of 'Netherton' in the 'wilds of Buchan.'

I cannot admit that Mr. Duncan's grieve is a quite competent judge (although he has been an eye-witness of the 'Everyday Life of a Farmer') to say that the statements therein made are all 'strictly correct and not exaggerated in the very least.' Two years ago, February, 1900, he wrote as follows:—'Our little Agricultural Society held its seed show (at Mintlaw, I suppose) in spite of the distressing weather, and was remarkable on account of the indifferent judging and the fact that the members of committee took all the prizes. It is a truism in rural circles that it is better to be a friend of the judges, or a member of committee, than to own the best stock at the show and this rule

seems to have held good in this instance.' Does the excellent and venerable secretary of the Buchan Agricultural Society and his committee consider the above is 'strictly correct and not in the least exaggerated?'

Referring to the death of the late Mr. Bruce of Inverquhomery (in same letter) he says—'He was one of the most successful landlords in Scotland.' Everyone who knew Mr. Bruce could quite endorse this remark. Not only were his stock of the very best description, but his fields were in the highest state of cultivation. Mr. Duncan boasts he has never spent 'one penny' on artificial manures at Monyruy. This revered and 'most successful farming landlord' to my knowledge laid down his turnip crop not only with abundance of cattle manure, but adding to it in many instances some 19 cwt. artificials per acre! This may have had something to do with his success, but of course 'one must cut the coat according to the cloth,' and so far as my observations go, most farmers add to the cattle manure the amount of artificials they consider necessary to produce full and profitable crops.

In a letter of date June 1st, 1900, I notice the following observations:—'We find a great deal of nonsense (sic) in the columns of the agricultural press about the good that has been done by science, in discovering various artificial manures, which have aided our farmers in attaining their position in the fore rank of agriculture. It is not for me to set myself up as an opponent to the theories of those scientists, but *having tried I believe every kind of artificial manure*, I consider I have some right to say a word on the subject. My present farm (Monyruy) had been badly *konnached*, to use a good Scotch word, for about twenty years, so when I signed my lease, I knew I had a considerable uphill work before me, but by an ample dressing of cattle manure I so surprised the soil, which had for years been accustomed to a scanty application of artificials, that it forthwith proceeded to produce excellent crops. Not only do I manufacture a large quantity of bulky manure on the farm, but I buy much more from any of my neighbours who are willing to sell, and who prefer the cheaper style of manuring by artificials. In course of time people began to remark my fine crops, and supposed my bill for artificials was a heavy one, to which my reply invariably was 'Not a penny.'

As I stand indicted for some seven years of the twenty, wherein the farm of Monyruy was so *badly konnached*, and being Mr Duncan's immediate predecessor, I distinctly plead 'Not guilty, sir.' As regards the 'nonsense written about artificial manures,' you will find in the last issue (report No. 2, copy of which I can produce), of the Turriff and Garrioch Analytical Association, season 1901—'Experiments with artificial manures in turnip culture (*mark you, without cattle dung*) when no manure of any description was applied, on the eight farms the crops weighed on an average 11 tons 11 cwts and 8 lb. per acre. With the addition of phosphates and potash to the value of 26s 1d per acre, the average crop rose to 20 tons 12 cwts 3 qrs. and 12 lb, and with an application of phosphates, potash, and nitrogen, at a cost of 35s 3d per acre, the average crop was 22 tons 3 cwts 3 qrs. 20 lb,—well-nigh double the average of the no-manure plots.' Please allow Mr Duncan to give us the details of the '*every kind of artificial manure* he tried before he discarded them, and the results he obtained.'

In addition to paying my predecessor on my entering Monyruy (the venerable Dr Anderson—long may he live and look happy) £162 13s 1½d for cattle manure, in the first year of my tenancy, I also paid the Northern Agricultural Company the sum of £226 18s 6d, chiefly for bones and lime—indeed I may state that before I entered into possession of the farm, I applied along with the grasses I sowed on one field of 20 acres, 4 cwt. per acre of bone meal (I hope this paid Dr. Anderson—manuring his way-going crop) at any rate it paid me, as that field of 20 acres or so grazed 45 two-year-old bullocks and a mare and foal, the whole of the following year (George Bruce, Aberdeen, supplied the grass seeds) with the exception of 14 days they pastured elsewhere. Is that field now doing as well; or is it not to a great extent overgrown with *reeds and rushes*?

As regards cattle manure which most farmers very carefully look after and 'don't sell to neighbours'—at least in my twenty years' experience—during my tenancy of Monyruy there were from 100 to 120 cattle always on the farm, also 3 to 4 pairs of horses, besides sheep and a herd of the very highly appreciated Yorkshire pigs. The corn crops would have averaged over 100 acres yearly, and being worked, as I have already stated, according to terms of lease on a six-course rotation of *three* grasses, your farming readers can estimate the quantity of cattle manure made and applied during my tenancy.

I would be glad to have, and your numerous readers, sir, will appreciate, the information as to the quantity of cattle manure Mr. Duncan has been able to purchase from his neighbours yearly since Whitsunday, 1888; and also, as to the *manufacturing a large quantity of bulky manure on the farm.* Does he refer to what can be done with 'herring refuse,' seeing he says he does 'not keep a cow,' and consequently is dependent on some neighbours for milk to his own porridge?

In his July epistle, 1900, he writes:—'I have no hesitation in stating that a rent of one pound per acre per annum is the highest that anyone should pay and expect to hold his own, or perhaps make a little profit, and this I may remark is the figure I pay for my own farm. One thing, however, I would caution an amateur farmer against, and that is taking a farm because it is low-rented. For example, I know one man, a far from practical farmer, who had leased a place at 25s an acre, but found in the course of a few years that he was losing money, so, having succeeded in breaking his lease, he went to the other extreme and rented one at 11s, but the farm he threw up used to give him six quarters of oats to the acre, whilst the one he took so cheaply only gave him 3 to 4 quarters, and so the last stage of that man was worse than the first. A very low-rented farm is one that is not worth taking at present, and only farms that can be worked up to the highest state of cultivation are worth taking on lease now-a-days. The low prices ruling for grain, beef and mutton, compel one not only to secure a good farm at a fair rent, but also to cultivate it at high pressure, in order to pay the labour bill and have something over. Farming on the cheap won't do at all, and if high farming won't pay, certainly low farming will not do so.'

The latter sentences of this paragraph most farmers will endorse—but as to the 'example of a farmer leaving the 25s farm and taking one at 11s an acre,' I do not think this is strictly correct, and

'not exaggerated in the very least.' Perhaps he had the writer in his eye; if so, this is the correct information, both for foreign and home consumption. During my tenancy I paid 28s 10d per acre for the 311 acres arable of Monyruy, and afterwards obtained my present holding (Burnside, Turriff), of 240 acres at 11s 8d, a difference of 17s 2d per acre, or on the 240 acres a difference in tenant's favour of over £200. As to the crops, and these can be verified, Monyruy (and please remember I was bound to bring it from a five-shift rotation into a six of three grasses) in no season yielded more than 5 qrs. 7 bushels per acre—the average for the seven crops I reaped being 5 qrs. 3 bushels and 4 bushels per acre. On 'Burnside' I have reaped a crop of 6 qrs. 7 bushels oats and barley per acre, and from several fields the yield has been from 8 to 10 quarters. But further, it was my fate to become proprietor of this farm, and by good cultivation and mostly on an 8-course rotation of 4 grasses, and other improvements, the property had been considered worth some 60 per cent more than I paid for it, and I believe it will be a better bargain to the purchaser than it has been to me.

But who can say that my *last stage* is worse than the first? Whether I can be counted a *far from practical farmer* or not is matter of small moment, but is for my neighbours and the public to judge—not the grieve of Monyruy, or Mr Duncan.

This is an instalment; there is more shot in the locker.—I am, etc.,

JAMES BEATON.

Burnside House, Turriff, 14th Feb., 1902.

[We do not find space for mere personal bickerings; but "Francis Grose" in the *Peterhead Sentinel* seems to take a sensible view of the matter when he writes in reference to an interesting artic e' in the *N. B. Agriculturist*:—

We did not see fit to refer to the article in the *Agiculturist.* It was written in a distinctly acrimonious spirit, the writer apparently quite failing to see that Mr Duncan was first of all a humourist, while at the same time the writer could not know whether the racy claims made by the Buchan farmer were in any degree accurate or not.

Mr Duncan, writing to a Ceylon paper, might, without breaking any bones, allege that his predecessors had "konnached" the lands of Monyruy. Probably nobody in Ceylon knew whom those predecessors were. And even then, the statement is probably only half serious, and doubtless means only that Monyruy was not cultivated as the present occupant prefers to cultivate it. Mr Duncan is a joker, without an ounce of malice in his composition. For the rest, he is a *rara avis* among Buchan farmers. The son of a professional man, himself well educated, much travelled observant, and accustomed to sheep as regards farming, it is only natural that his ideas of farming and of things in general should be greatly different from the ideas and methods of his neighbours. I have always understood that Mr Duncan succeeded with his sheep, paying twenty shillings in the £, and finding a good deal of leisure for the entertainment of the lieges in his district. Farming has by no means reached its *ne plus altra*, either in Buchan or anywhere else, in this year of grace 1902. I have no doubt criticism and suggestion are just as much wanted today as ever they were; and certain I am of this, that few people are likely to go about the business of criticism with less of animus than is the yeoman of Monyruy.

It is customary to keep the pleasant things we have to say of a man until he is dead. I have always jibbed against the injustice of just praise being deferred in the utterance till obituary notices have to be written. Without at all believing that Mr Alfred Duncan stands in need of special pleading, I am glad to avail myself of this opportunity of saying that I have always found him the same—good-natured, waggish, energetic, entertaining, courteous, versatile, a man of his word—altogether the most interesting and satisfactory farmer *I* have met with in Buchan. Whether it be to deliver a lecture, to take the chair at a public meeting, to sing a song or to write one, to "scrieve" a column of breezy "copy"—story, notes, article or what not—there is not, I believe, such another in his class in Aberdeenshire. A faculty for racy extravaganza in his *metier*: we would not have him without it; and if the editor of the *North British Agriculturist* could only hear him making sport for the Longside public in St. John's Hall, he would never want to write such scornful comments as those he penned a month ago on this "Buchan farmer." Long may the Flockmaster of Monyruy live to apply the surgery of tar, and to say with Corin: "I earn that I eat, get that I wear, owe no man hate, envy no man's happiness; glad of ther men's good, content with my harm; and the greatest of my pride is to see my ewes graze and my lambs suck."

FRANCIS GROSE.

—ED. *T.A.*]

TOBACCO-GROWING IN TRINCOMALE DISTRICT.

NOTES BY A CULTIVATOR.

DEAR SIR,—Correspondence about "tobacco growing" in the columns of your paper of the 19th instant prompts me to address you on the feasibility of the cultivation of tobacco being successfully and profitably grown in the Trincomalee District under European auspices, owing to the existence of most appropriate and suitable tracts of land to the south.

THE PLAIN OF "VELLAI"

lies 12 miles away from "Mutur" village, in "Koddiarpattu." It is now used as pasture ground by cattle speculators who bring droves of black cattle from India, and from Kraals at different points. It abounds in Guinea grass washed in by the "Mahaweliganga" from upcountry. The last deviation of the river is about 3 days' journey from its entrance into Koddiar Bay, and this abandonment occurs over a hamlet called "Pavana" near Kuringamuwa—Brooks channel, lying between—and the off shoot forks or splits itself into two branches, the one called the "Verugel aar," the boundary of the Trincomalee and Batticaloa Districts, and the other called "Vellai aar," deriving its appellation from the locality, and both of these flowing streams of fresh water meet at a point, above the sea, at a place called "Periavelli," where the feeder of "Allai" tank takes its rise, and flows as a united river called the Verugel river, between Trincomalee and Batticaloa. Thus it will appear that the vast plain of "Vellai" is quite surrounded by fresh water, the virgin soil is alluvial and rich, and well-adapted for tobacco cultivation, an account of which, as it is carried on here, I append.

TOBACCO.

In Trincomalee, it is mostly grown in open lands about the Town from No 1 Division northwards, up as far as "Nillavelly" village, which is 9 miles away and where large tracts of Crown lands have been recently purchased of Government for cultivation. The soil of gardens in Town is loamy or marly earth, but towards Nillavelly it is sandy, and better adapted I fancy for coconut planting, but yet Tobacco is extensively grown. The fertilizer used by cultivators is compost from dunghills, or native manure. The seeds are raised in nurseries near wells, during the months of October and November, and the native cultivator who has no scientific knowledge pertaining to soil, chooses the most convenient spot which is dug and manured with dry, powdered cattle dung, and encloses the spot with a temporary fence, and thence sows his seed. When the seedlings sprout and shoot forth three or four tender leaves, they are considered fit to be transplanted.

Meanwhile the land is turned over by a mamoty, an adjunct for a spade or shovel, and this is great manual labour. The earth thrown up is levelled, and the area squared and lined parallel with each side, and thus each line intersects the other and the plants are set 4 feet apart, and well shaded. They are watered by earthen pots for a week 3 times a day, and afterwards for a week both mornings and evenings only, and in 22 days the shades are removed. The ground is then weeded and water let in to irrigate the plants every other day for 8 or 9 days. Afterwards the whole ground is tilled and 4 to 6 plants are banked in one bed and left for two or three days to bask in the sun—water is afterwards irrigated daily until maturity. Watchful search of destructive worms is unceasingly made at this time as otherwise the leaves will be perforated by these pests.

After 15 or 20 days the main stalk is nipped off and the shoots after every eighth day pinched off. It is now that good and well-grown trees are spotted, and the top shoots are allowed to throw additionally a couple or three leaves, and then lopped. These leaves are said to be superfine or very best; those below, on the parent stalk, from two to five in number, according to the fertility of the soil, are said to be of best quality; those beneath, of second quality, and underneath ones, as inferior.

It takes a little over six weeks before the plants are well-matured with narcotic propensities, and altogether five months before the crops are able to be gathered for manufacture. Abundant rain about this time is considered unpropitious and tending to wash away the principles of the leaves, seasonable showers and drizzles are much looked for. The plants are cut during the afternoon at about 3 o'clock so as not to expose them to too severe sun-rays. They are hung up for airing in cadjan sheds, well secured from the sunbeams with plantain leaves, &c. for 20 days, and are then unloosed and laid on the ground in stacked heaps for a week. Then the leaves are pared of thick veins and bundled according to qualities and left on the ground for four days; afterwards untied and re-hung up for four days; finally, piled again for a week, when the gaseous change takes place, and resorted, superfine, and leaves of

1st quality	20 to a	bundle
2nd do	30	do

Common—picked up haphazard and made into bundles of about 50, more or less.

The cultivation of tobacco is considered very paying. I should like to hear from any correspondent in your columns of the modes adopted at Jaffna which I hear are quite different.

J. B. C.

ACTUAL OUTTURN OF THE INDIAN CROP—AND THE PROBABLE CROP OF 1902.

Indian Tea Association, Calcutta, Feb. 18.

DEAR SIR,—I am directed by the General Committee to annex the following comparative statements of the actual outturn of the crop, so far as returns have been received for the two seasons 1900 and 1901 respectively:—

	1900.	1901.
Assam ..	68,708,916	65,203,402
Cachar ..	27,299,230	23,806,587
Sylhet ...	34,038,023	29,699,728
Darjeeling ...	7,738,018	7,323,542
Tera ...	3,637,680	3,374,985
Dooars ...	30,220,001	30,542,037
Chittagong ...	1,065,300	831,020
Chota Nagpur..	185,089	248,187
Kangra Valley	3,000,000	2,435,405
Dehra Dun ..	1,785,000	1,798,560
Total ..	177,677,257	165,263,453

2. I am to draw your attention to the fact that the particulars given in these two statements are derived from identical sources. So far as Assam, Cachar, Sylhet, Darjeeling, the Terai, the Dooars, Chittagong and Chota Nagpur are concerned, the figures for each year represent the totals of returns submitted by 28 agency houses; while for Kangra Valley and Dehra Dun the figures have been furnished by the local Planters' Associations.—Yours faithfully.

W. PARSONS, Secretary.

[The exports from Southern India have to be added to the above. In respect of the present year's crop, the General Committee in Calcutta have published the following:—

(*a*) THE PROBABLE EXTENT OF THE CROP FOR 1902.—With the letter dated 17th January, Mr. Tye forwarded copies of a circular, drawing attention to the following resolution which had been adopted by the London Committee, namely:—"That this committee, viewing with grave concern the disastrous results that would follow a large crop of tea in 1902, strongly urge upon producers the necessity of restricting outturn as much as possible by a system of more careful plucking than otherwise, and to avoid more especially the production of coarse tea, which did so much harm to the industry in season 1900," The circular had been issued to all the members of the London Association; and it contained a statement of the reasons which had induced the London Committee to pass this resolution. An appeal was also made in it to producers to abstain from the coarse plucking which had been restored to in 1900. A circular on similar lines had been issued by the Tea and Produce Committee of the Ceylon Association in London. After consideration, the General Committee decided to reprint the circular, and to issue it to tea producers in India, with a covering letter supporting its chief proposition.
—ED. *T.A.*]

RUSSIA AND THE INCREASE OF THE TEA CESS.

Sir,—I venture to suggest that the Thirty Committee would benefit estate owners in Ceylon more by arranging that an allowance of one, or say two, pounds per package should be made on all teas sold direct to Continental, Australian and American buyers in Colombo instead of taking money for advertising purposes. In Russia the tea business is in the hands of the importers who will push the tea out of which they can make most money, and as they always get a *gain in weight* on *China teas* they resent the *loss in weight* on Ceylons. English goods are not popular in Russia just now, and it would be much more advantageous to allow the importers and blenders to put their own marks on the packets sold, as the name of Ceylon connected with anything English won't help the sale of the teas.—Yours, etc.

A SHAREHOLDER IN CEYLON TEA ESTATES.

Moscow, 4/17th February.
—Local "Times."

CEYLON TEA ON THE CONTINENT.

Sir,—In your paper of the 16th January I have read a letter headed "A talk with Mr. J H Renton" which I think is likely to mislead estate owners. Having been over 22 years in the tea business with Russia, Germany and France and nearly 20 years of same in China and 5 in Ceylon (on and off !), I fancy I know as much as, if not more about the prospects of the Ceylon tea trade there than Mr. Renton. Owing to the credit system it is absolutely necessary to work the trade through the importers, and Mr. Renton is at present only annoying these gentlemen who are quite willing to buy the best teas in the cheapest market, but naturally wish to introduce their own blends out of which they can make something. Ceylon is known to be a British possession, and for this reason teas so marked are anything but popular, as I well kuow, having just been round Germany and Russia. I recommend the planters to save the worse than useless expense of advertising and agents like Messrs. Rogivne, Renton, etc., who I am prepared to state, have not induced one-thousandth part of the present Ceylon consumption. They had far better allow the buyers in Ceylon 1 lb. on each package to cover possible loss in weight which often happens and annoys the importer (who gets about 3 lb. in China bought teas), and also arrange that the buyers in Ceylon can obtain more of the better teas so that same may be sent to the Continent direct, and not through London hands who have to take a commission, to say nothing of freight paid on the teas, and delay in transport. It is a pity that some of the chief estate owners cannot visit the Continent and endorse what I have written above.—Yours, etc.

BUYER AND SHAREHOLDER.

Berlin, 21st February, 1902.
—Local "Times."

THE PROPOSED INCREASE OF THE CESS.—IV.

3rd March.

Sir,—You have rendered excellent service to the cause of truth by the transfer to your columns of Mr Lampard's letter to your evening contemporary. It it is not often that one provide added circulation to the arguments of one's adversaries. It is not often, perhaps, that the adversary so effectually proves the weakness of his own case. In the columns of the acquiescent "Times of Ceylon" the plausible array of formidable figures will help to establish a foregone conclusion. To the more intelligent readers of the inquisitive *Observer* they will only exhibit the weakness of the cause they are intended to further. If they offered the best argument, or any argument at all, for an increase of the Cess, then the increase must rest on a very slender basis.

In one word the opposition to any increase just now rests on the alleged fact that the cess, as at present administered in the United States, has (1) aroused the opposition of the trade, and (2) has not produced results at all commensurate with the expenditure. On the first part of this allegation, Mr Lampard is sileut; the second he seeks to disprove by quoting figures which show a considerable growth in the foreign exports of Ceylon Tea (*i e* exports to countries other than the United Kingdom) since the Cess was started. The irrelevancy of his argument is obvious. The satisfactory development of the trade in the *United States* cannot be proved by lumping the figures for the whole world *minus* the United Kingdom. The Stars and Stripes have yet to dominate the world ; but the fallacy of the argument is worse than its irrelevance. Mr Lampard knows as well as you and I do that, it the figures for the several countries be separated—as they easily can be—the greatest growth in trade will be found to be in those which have *not* been helped by the Cess; and that of the countries in which Cess-money has been spent, the United States show *about the least* growth.

Mr William Forsythe follows his leader ; but while he leaves the formidable figures alone, save for an indirect confession that they had reached his heart, he supplies the omission in Mr Lampard's letter by an indirect admission that the back(bone) of the trade has been stroked the wrong way. "The disappointed applicants for the bounty of the 'Thirty Committee' are endeavouring to turn and rend them." Precisely ; and that frame of mind does not promote trade.

But the burden of Mr Lampard's deliverance is gratitude to the much-maligned Thirty ; and Mr Forsythe, as one of "the much-abused body," acknowledges with tears the graciousness of the farewell benediction. But, are not these gentlemen under some delusion ? Where is the abuse to be found ? I have noticed considerable warmth in the speeches and letters of the rural members of the infallible Thirty; but I cannot recall any similar heat in references to them. Only the success of their methods has been argumentatively questioned, as also the wisdom of continuing work on lines proved to be unsuccessful. If the Thirty can serve only if all they do is approved without question, let Forty be tried, on the chance that ten may be found with a skin not too sensitive to criticism.

Though you, Mr Editor, have repelled the charge of having incited an appeal to Cæsar, such incitement would be perfectly legitimate. The minority must accept the decision of the majority in matters affecting the common-weal ; but private property is sacred. No majority can decide to put their hands into my unwilling pockets. Let what is wanted to be wasted in the United States be raised by voluntary subscription. There is no socialism in Tea.

OUTSIDER.

RUBBER PRODUCTION.

We direct attention to an important article on this subject from the latest number of the *Brazilian Review*—quoted on page 676. It raises an alarm against the short-sighted system of practically killing out rubber-yielding trees in the Amazon Valley; and foretells the result. But we question if the natives employed to collect rubber can be got to alter a practice which gives them the greatest present return. In Africa, on the other hand, there are some attempts at the culture of rubber-yielding trees, apart from the large field for collection from forest trees and vines; while in Mexico, chiefly through American enterprise and capital, very extensive planting has taken place. At the same time there seems no limit to the uses to which rubber can be applied, and though the supply of the raw material should increase considerably—of which there is no immediate prospect—we doubt if there would be much fall in price. The moist districts of Ceylon and the Straits up to a certain elevation should grow rubber-yielding plants as profitably as any part of the world in our opinion.

MR. R. V. WEBSTER AT THE FRONT.

Mr. R V Webster writes as follows:—

Heath's Hotel, Johannesburg, Feb. 16.

At present I am so pressed with work that I hardly know which way to run, On the 17th December I landed at Cape Town as "Special War Correspondent for *Black and White*, and *Daily Express*." At first I could only obtain a licence for Cape Colony, but later Lord Kitchener gave me a special licence for South Africa.

Leaving Cape Town on the 30th December, I proceeded to Aliwal North, (North East Cape Colony), where I arrived on the 4th January. The following day I accompanied the District Mounted Troops and Connaught Rangers with a convoy to Jamestown. From there we proceeded to Lady Grey, and joined Lord Lovat's Scouts. The combined forces then trekked out after Fouchee, Myburg and Wessels; we had some hard work but they were too quick for us, and we returned to Aliwal North with a number of horses and cattle that we captured. As the troops went into camp to rest I took train to Port Elizabeth and completed a little business I had on hand. I then proceeded to Johannesburg and Pretoria, when I got the offer of a commission in the Cape Colonial Force with instructions to report myself at Cape Town; four days later my commission was approved of by His Excellency the Governor and Executive Council. I was then attached as Staff Officer to the Commandant of No. 12 Ares, and with that Officer proceeded to Port Elizabeth, East London, Queenstown, and on the 8th February arrived at Aliwal North. The following day I was given command of No. 2 troops of the "District mounted Troops," and took up my quarters at Kraal Bridge; we had an exciting time as Wessels with two hundred men took up a strong position five miles further up the river and we were waiting for the Connaught Rangers to cut off their retreat further up still, but the Boer does not sit with his eyes closed, and before the Connaughts could get into position they were off. When I was on the previous month as correspondent I left a card at a farm frequented by the Boers, and told the good lady of the house that I should be pleased to meet Wessels if he would send me a message to the Balmoral Hotel, Aliwal North. with instructions where he would leave particulars as to where I could see him. The night before I left Aliwal North a native brought me a note on which was written, "Dear Mr. Webster, I would like to see you, but that is impossible just now. Yours, P W WESSELS." The Boers on the farms say I am the exact double of Wessels; when they first saw me in uniform, they thought that Wessels had joined us.

On the 10th February I received a letter asking me to proceed to Johannesburg as soon as possible, as Lord Milner has a most difficult job on hand, and they think I have the qualifications for the post. That same evening I received a second letter enclosing a special permit, and informing me that His Excellency Lord Milner wished to see me as soon as possible, as they had on hand a most difficult task, and thought I could be of great assistance. I obtained seven days' leave, and took train that night; the second night out we ran into the engagement at Klip River Station, where some two hundred of the 28th Mounted Infantry were killed and wounded; this Battalion had only arrived from Aldershot about a month, and had not yet learnt that none but fools move without scouts in advance. I should like to relate some incidents that have taken place within the past month, but correspondents are not allowed to relate what they know, but must write that which will please the British public.

At 9 a m the following morning we arrived at Johannesburg, and I lost no time in getting to the Hotel and a tub which was most refreshing, not having had my boots off for four nights. Taking a rickshaw I went to Castle Building, and reported myself to His Excellency's Private Secretary, most anxious to know what the "difficult job" was. Half an hour later and I was ushered into the presence of His Excellency Lord Milner, the one man who is feared throughout South Africa more than Lord Kitchener, I was agreeably surprised to find in the great ruler of South Africa, the much dreaded Lord Milner, a man with whom you at once felt quite at ease, and with whom it was a pleasure to converse, even on important matters connected with the future settlement of South Africa.

The "important job" which His Excellency has on hand is the settlement of settlers on the Government lands and farms in the Transvaal, and the purchase of certain farms from the Boers. After three hours' interview, I left with an invitation from His Excellency to return to lunch at 2 p.m. After lunch His Excellency asked if I would accept the appointment of Visiting Agent for the Transvaal Government, Land Secretary to the Land Settlement Board, at a salary of £160 per month, and travelling expenses. My first duty is to engage a staff, after which I leave to inspect the Barberton district, which is northeast of Johannesburg, close to the Portuguese territory. I have not yet decided if I shall accept the post as a permanent appointment.

Should you know of any Ceylon men who are anxious to take up farms in South Africa, I shall be glad to hear from them, giving full particulers, as to age, married or single, past experience in farming if any, where and of what nature, and

if any capital what amount prepared to invest! Business letters should be addressed to the "Secretary, Land Settlement Board, Government Building, Pretoria," and private letters to Lieut: R V Webster, D M T. Government Building, Pretoria. Will you please instruct your manager to forward my paper to Pretoria? With salaams.

P S.—I leave for Pretoria tonight, and will stay with Mr Davidson, who, I hear, is very busy with his department, as the Colonial Secretary has been very ill for some months and unable to attend to office.

TROUT ON THE NILGIRIS.

A correspondent writes:—"Sportsmen will be interested to know that a consignment of trout ova from Messrs. Andrews, Guildford, has arrived in good condition at Ootacamund. The ova are partly *Salmo fario*, and partly *Salmo irridens* (the rainbow trout which has been such a success in warm climates). The greatest difficulties having been overcome, it is to be hoped that good luck may be with those in whose care the ova are. For several years past nothing has been done, owing to various causes, and two consecutive consignments of ova arrived hopelessly bad. This year, however, the Nilgiri Game and Fish Preservation Society was lucky enough to find friends to help it in the officers of the Royal Indian Marine, and these being sportsmen, and therefore taking a personal interest in seeing the ova cared for on board-ship, delivered the ova in splendid condition at Bombay—and this was what money has been unable to insure hitherto. Mr Van Ingen, the well-known taxidermist, kindly undertook the journey to Bombay, and it can easily be understood that, at this time of the year, constant attendance and an unlimited ice supply, day and night, were necessary. The ova have been settled in the hatcheries, and should develop in about a fortnight."—*M. Mail*, March 14.

NATIONAL ANIMALS.—Our Indian and Far Eastern States—says the *Spectator*—are not at all behind the rest of Great Britain in their desire to commemorate famous "natural commodities" of one kind or another, but the picturesque and the terrible play a part in these devices. Pahang takes for its representative beast a tiger, either roaming or slinking through the jungle. North Borneo shows the native rusa deer, an inhabitant of its impenetrable jungles of swamp grass. The Seychelles "sport" their famous tortoise under the usual coconut palm, and the Federated Malay States a tiger bounding from the jungle. The Rajah of Travancore emblazons a device which is variously interpreted as a sacred shell and a coiled cobra. Time will show how many of these emblems will become permanently associated with the countries which use them on their stamps and securities. But it cannot be questioned that many of the totems are well chosen, and show considerable "grace of congruity." It is public feeling which really gives currency to any of these fancies. If the greater number prove acceptable, there will be a very large addition to the zoological side of the political cartoons of the future.

[In the case of Ceylon there is the sacred 'Hansa" or goose in the temples, and the curious lion on some of the old Sinhalese flags as indicating a lion-descender (Sinhalese) race?—ED. *T.A.*]

THE YATADERIA TEA COMPANY OF CEYLON, LIMITED.

THE DIRECTORS' REPORT.

The Directors have pleasure in submitting the balance sheet and profit and loss account for the year ending 31st December, 1901.

The profit for the year is R56,246·67, to which must be added R808·28 balance from 1900, and the Directors propose that a dividend of 20 per cent absorbing R38,000·00 be declared, R19,000·00 reserved for working capital, and the balance R54·95 carried forward into 1902 accounts.

It will be seen that the property representing capital stands in the balance sheet at approximately R194·00 per acre cultivated, as compared with about R197·00 per acre in the previous year's accounts, and that the profit is R59·71 per acre in bearing, and 29·63 per cent on the capital.

The total tea crop was 580,108 lb or 13,937 lb less than the estimated quantity, the short crop being due to a finer system of plucking and unfavourable weather, the area under leaf being 942 acres. The total quantity of tea for disposal was 601,200 lb. including 21,092 lb, made from purchased leaf, of which 382,909 lb were sold locally averaging 29·96 cents per lb and 218,291 lb. shipped to London of which 140,482 lb had still to be accounted for; but the average obtained for the 77,809 lb as yet accounted for is 25·61 cents per lb. The cost of the tea per Supereintendent's Estate Report was 18·13 cents per lb, and the total cost delivered to buyers or put on board ship including all charges was 19·37 cents per lb; or, exclusive of Depreciation, 18·88 cents per lb; the nett value realised from sales (a portion being estimated) was 29·51 cents per lb.

The Company's property consisted on the 31st December, 1901, of:—

981 Acres Tea.

Acres Tea				lb. tea	
172	planted in	1885	yielded in 1901	580	per acre
208	do	1887	do	527	do
100	do	1888	do	541	do
42	do	1889	do	723	do
6	do	1890	do	857	do
52	do	1891	do	888	do
120	do	1892	do	725	do
68	do	1894	do	687	do
37	do	1895	do	863	do
75	do	1896	do	682	do
33	do	1897	do	333	do
29	do	1898	do	240	do
24	do	1899	Not in bearing		
1	do	1900	do		
14	do	1901	do		

22 Acres Coconuts, Rubber & Factory Site
10 Acres Cardamoms
255 Acres Forest, &c,

1,268 Total Acres

The estimated crop for 1902 is 580,00 lb. Tea.

THE TALGASWELA TEA COMPANY OF CEYLON, LIMITED.

THE ANNUAL REPORT.

was submitted as follows:—

	Acres.
Tea in full bearing	455
Abandoned	135
Cinnamon and Tea abandoned..	43
Ravines	113
Forest boundary belts	53
Forest	1229
Total Acreage.	2028

The Directors beg to lay before the Shareholders their Fourteenth Annual Report with a duly audited

Statement of the Company's affairs to the 31st December 1901.

Owing to the very unfavourable weather during several months of the year, the yield has not come np to expectations, the crop secured being only 133,760 lb against a revised estimate of 160,000 lb made tea. 30,199 lb of tea were manufactnred and sold on behalf of the Galinda Estate and the profit on the manufactnre of this tea is shown in the accounts. The crop realised a net average of cents 28·39 against cents 28·63, in 1900, all tea having been sold in the local market.

All expenditnre on the Estate has been debited to crop account and, after payment of interest to Preference Shareholders and writing off 5 per cent depreciation all round on bnildings and machinery, the Directors regret to say that a sum of R322·42 remains lying to the debit of Profit & Loss Account.

The Estimate for the current year is 150,000 lb which the Directors hope will be secured at a cost slightly below last year's expenditure. Cost of tea laid down in Colombo during 1901 was 25·78 cents per lb as against 26·12 cents per lb dnring 1900 and the poor results of the working is entirely dne to the shortage in crop.

Mr W MacGregor retires in terms of the Articles of Association and, being eligible, offers himself for re-election.

The appointment of an Auditor rests with the Meeting.

THE KELANI TEA GARDEN COMPANY, LIMITED.

THE REPORT OF THE DIRECTORS

was submitted as follows :—

ACERAGE.

334	Acres	Tea in full bearing
30	,,	,, planted 1897
34	,,	,, ,, 1898
10	,,	,, ,, 1899
14	,,	,, ,, 1900
422	,,	
313	,,	Reserve
11	,,	Ravines, Waste and Grass
746	Acres.	

The Directors submit to the Shareholders the accounts of the Company for the year ending 31st December, 1901.

The Crop secured for the year amounted to 150,095 lb, of made Tea, realizing R47,316·81, or an average price of cents 31·52 per lb., as against an expenditnre, exclusive of items under Capital Account, of cents 25·80 per lb. including R1,840·44 spent on cost of Manure and application.

The Balance at credit of Profit and Loss Account after allowing for depreciation of Buildings and Machinery is R6,807·30, which the Directors recommend shonld be carried forward to next Account.

The Directors regret the resnlt of the year's working has not been more favonrable owing to the adverse conditions of the Tea market prevailing during the early part of the year, coupled with the unfavonrable weather for flushing experienced dnring the latter months.

Whilst a better average price was obtained for the year, an increase in expenditure occurred owing to the shortness of crop and a more careful selection of leaf being made.

The estimate for the current season is 200,000 lb. made Tea, to be delivered in Colombo at a cost of cts. 23·42, which inclndes a sum of R4,750, or the equivalent of cts. 2·75 per lb. to be spent on manure.

In terms of the Memorandnm of the Articles of Association, Mr. Hoseason retires from the Board, but is eligible for re-election.

The appointment of an Auditor rests with the Meeting.

THE ROEBERRY TEA COMPANY.

THE DIRECTORS' REPORT

was submitted as follows :—

ACREAGE.

Tea in bearing	...	497 ares
,, 4 years old	...	109 ,,
,, 3 years old	..	36 ,,
		642 acres
Cardamoms	..	4 ,,
		646 acres in cultivation.

The Directors have now the pleasnre to submit the Sixth Annnal Report and Accounts, being those for the year ending 31st December, 1901. The yield of tea during the period has been 291,324 lb, costing 24·42 cents per lb, as against 26·89 cents per lb last year; and realizing 37·66 cents per lb, as against 41·60 for the same period.

After providing for commission due Snperintendent, and making a liberal allowance for depreciation of buildings and machinery, the amonnt at credit of Profit and Loss is R27,391·06. To this must be added the snm of R570·76 brought forward from last year, making a total of R27·961·82 now available for distribntion.

The Directors recommend the payment of a dividend at the rate of 5 per cent. on the paid np capital of the Company, which will absorb R15,000·00; that a sum of R12,500·00 be placed to Extension Account, thns bringing it to R20,000 00; and the balance R461·82 be carried forward to cnrrent season's acconnt.

The Directors are pleased to state that a further £1,000 of the mortgage has been paid off during the year, thus redncing it to £1,500, and in accordance with the policy indicated in their last Report, the balance of the Company's indebtedness will be finally liquidated as soon as may be—during the present season if possible.

The estimate for this year is 300,000 lb. tea on an expenditure of R76,200·00, which includes cost of clearing and planting 15 acres of tea and 10 acres of cardamoms.

The retiring Director is Mr. Stanley Bois, who is eligible for re-election.

The appointment of an Auditor for the current year rests with the meeting.

THE PROPOSED INDIAN TEA CESS.—We are glad to see that *Indian Gardening and Planting* is doing its best to promote the cause of the Indian tea cess. The following is the winding up of its latest article on the subject :—

These considerations we earnestly tender to the Indian Government. It is their affair as much as it is the planters', for the industry is a revenue producer, besides being a blessing as an employer of labour. It is not merely a question, we submit, of a unanimous vote on the part of the tea producers. The present situation, produced by the powerful rivalry of Ceylon, and the receding position of Indian tea on foreign markets, lifts it into a question of State policy, which should justify the Government from ignoring the minority, who are indeed not actively opposed to our securing a Cess similar to that of Ceylon, but are only apathetic in seeking for it, or actually neutral in their feelings towards it.

THE LONDON CINNAMON SALES.

The mail of 28th Feb. from Europe brought particulars of the quarterly Cinnamon Sales held in London on the 24th Feb. The brief telegraphic intelligence we published three weeks ago, made us fear a worse sale than is disclosed in the catalogues. The quantity offered was by no means excessive for the first sale in the year, and fell far short of the offerings in February, 1901, when an unusually heavy catalogue had to be faced; but at the November auctions exceptionally high prices were realised. A drop was almost inevitable unless unexpected circumstances helped to maintain prices; and as "worked" spice showed an advance of 1d to 2d a lb. in November, the falling-off of a penny last month yet secures for Cinnamon quills of the best marks satisfactory prices. It will be seen that "worked" Firsts fetched from 1s 5d to 1s 7d, and both Seconds and Thirds ran these figures close; while Fourths ranged from 8½d to 11d per lb. The quantity of fine bark which offered (109 bales) was small, and the whole of it seems to have been disposed of at the auctions. The "unworked" spice which generally includes the coarser makes aggregated 1,202 bales, and so large a proportion of the inferior marks necessarily led to a fall in price. The drop of ½d to 1d, at which nearly 1,000 bales were cleared, cannot be regarded as heavy; and on the whole the Auctions were not as disappointing as we feared they would be from the private wire to which we gave prominence at the end of last month. Unworked bark from 7d for Fourths to 1s for Firsts, should leave a fair margin to the producer; but as we have remarked before, there seems no limit to the expansion of Cinnamon exports. Last year we sent away 2¾ million lb. quilled bark, and over 1½ million chips; and that prices did not recede more markedly if proof that new uses are being found for the spice, and that the demand is not far short of the supply which would have been deemed ruinous twenty, or even ten years ago. Still, there is a limit to the consumption of what must be regarded as a luxury, save so far as Cinnamon is used for medicinal purposes, and if the acreage under the spice continues to expand in the Southern Province, there may be a reversion to the prices which almost ruined the industry 20 to 25 years ago. We note that the exports this year, so far, are much shorter than in the three years preceding—due doubtless to the severe drought which has been experienced the last few weeks, following insufficient rainfall from the North-East in the low country. The prices which Chips fetched, 3½d to 3⅝d per lb., have seldom been exceeded, and point to a useful demand; but how anything which fetches less than a penny a lb. in England can be profitably exported from here is a puzzle. Rather, there can be no doubt such business cannot pay, and that, we are glad to find, is the position of "Wild Bark" which represents a dishonest trade in adulterated stuff.

The following is the report of the well-known London firm of Forbes, Forbes & Co., Limited:—

9, King William Street, London, 25th Feb., 1902

CINNAMON.—Yesterday's auctions, the first of the year, went off with a quiet tone, the competition being poor; 1,311 bales Plantation quill were offered compared with 2,162 bales at this period last year and 1,690 bales in November.

The usual "worked" spice comprised the small quantity of 109 bales only and these sold irregularly at late prices to 1d per lb. decline.

The "unworked" Cinnamon comprised with 1,202 bales (including 51 bales which had to be worked owing to sea damage, &c.) of which nearly 987 bales were cleared chiefly at ½d to 1d per lb. lower.

The regular "worked" marks sold, first 1s 5d to 1s 7d; seconds 1s 3d to 1s 6d; thirds 1s 2d to 1s 5d and fourths 8½d to 11d per lb.

"Unworked" first 8½d to 1s; seconds 8d to 10d; thirds 7½d to 9½d and fourths 7d to 8d per lb.

CHIPS, &c.—Of 776 bags only a small proportion sold, chips 3½d to 3⅝d and quillings, &c., 9d to 10d per lb.

BARK.—847 packages offered and 63 sold at ¾d to 1d per lb.

WILD CEYLON.—586 packages offered a few lots meeting bids of ½d to ⅝d per lb.

		1901.	1900.
Stock of Ceylon	3,420 bales	4,245 bales	4,109 bales
,, ,, chips	2,318 ,,	4,360 ,,	2,736 ,,
,, Wild Ceylon bark	9,945 pkgs.	9,616 pkgs.	12,938 pkgs.

NEXT AUCTIONS.—26th May, 1902.

Forbes, Forbes & Co., Limited.
ALFRED E. HOARE, Managing Director.

PROFITABLE TOBACCO CULTURE.

One of the features of American tobacco production is that a very remunerative variety of leaf is given in Connecticut, although the climatic conditions of that State, situated as it is in the east, along the shores of the Atlantic are, both as to cold and poorness of soil, the very reverse of those which obtain where the large plantations are down south. Now, an effort is being made to produce the most valuable class of leaf, in connection with which the director of the Connecticut experiment station thus reports:—

The best Sumatra type is a leaf smaller than the Havana, 16 inches or 18 inches being the most desirable length light to medium colors with open grain, free burn, great elasticity or 'life,' and very thin texture. That is what the trade wants. In 1900 the Connecticut station began trying to raise this quality of leaf. One-third of an acre was enclosed with a substantial wooden frame, to support a cover of very thin cheese cloth 9 feet above the ground, and closed on all sides to the ground with the same material. The soil was fertilised as usual for our other leaf, and half the acre was set with Sumatra plants, and the other half with New England Havana. Both were set much closer than is usual in rows 3 feet and 1½ foot apart, and plants 12 inches apart in the row. The cover was a perfect protection against insect pests. Cut worms did some damage to the young plants, but no flying insects preyed on the tobacco. At harvest it was very hard to find a leaf which showed insect bites. The tobacco was also perfectly protected from wind whipping and from light hail. The temperature under the shade was considerably higher than outside, and fluctuated less.

Two rows each of Havana seed leaf and of Sumatra, grown under the shade, were topped, rather high. The leaf from the topped plants, however, after curing, was seen to be distinctly inferior to that from the untopped plants. The untopped tobacco of both

varieties grew to the cover 9 feet from the ground, and the Sumatra, stalks bent over and grew to a length of 10 feet or 11 feet. The occasional wind and rain storms of the summer did no serious damage to the cheese cloth. The leaves were picked or 'primed' when they were thought to be ripe, strung on strings, cured in the usual way, and then fermented in a pile or 'bulk.' When ready for market, samples were taken from the several primings, except the first which included only inferior bottom or sand leaves. Each hand was a single string of leaves just as it was strung by the girls, and therefore represented the general run of the leaves and not a selection. After taking samples this little broken lot of Sumatra leaf, from only one-sixth of an acre, sold for 3s per lb. The samples were sent to a number of leading dealers and manufacturers, with the request to examine carefully and give their opinion of the quality of the leaf, and to also state fully its defects.

These reports from men who are in touch with tho present condition and requirements of the tobacco trade, and who had no personal interest in the crop, settle beyond dispute the quality of the Sumatra tobacco which we raised. The experiment has demonstrated without doubt that Sumatra leaf of excellent quality can be raised under the conditions of soil and climate which prevail in New England. It remains to be seen whether such tobacco can be economically raised in New England : that is to say on a considerable scale at a profit, To determine these points will require further experiment. Farmers may be advised to undertake to raise Sumatra tobacco under shade at present, in only a small way and purely as an experiment, which will not seriously injure them, even if not successful.—*Melbourne Leader*, Feb. 15.

A LARGE BLOCK OF "PEARL."

Wellington, Feb. 27.—A large block of pearl, weighing 12½ gr., has been found inside a cockle at Port Chalmers.—*Adelaide Observer*.

LIQUID FUEL FOR TEA DRYING MACHINES.

The experimental stage in the burning of petroleum as a fuel has passed, and the recent developments of oil fields in many parts of the world have placed this commodity within easy reach of many consumers. It has been used with conspicuous success in the manufacture of tea. For stationary boilers, the problem of raising steam effectively and economically has been solved by the use of oil. The combustion is so complete and the heat generated so great that the system presents a direct saving as compared with coal or coke, to say nothing of indirect economies, such as cleanliness, ease of handling, absence of stoking and saving in labour, complete absence of smoke, economy of space, no ashes, and an even temperature and constant even pressure of steam. As a steam producer, oil has no rival. A considerable portion of the heat value of coal goes off in smoke and cinders, while the entire calorific effect of the oil is obtained, and one ton of oil has been proved by many careful tests in actual consumption to be equal to twice that amount of the best Welsh coal.—*Tea*.

THE ROEBERRY TEA COMPANY.—A dividend of 5 per cent was declared at the meeting held on the 18th March, and this we consider a very good result indeed in view of the hard times through which Tea Companies have had to pass recently.

CEYLON AND INDIA AS TEA-GROWERS AND TEA-RIVALS.

"Let it always be remembered that Ceylon and India are rivals, and deadly rivals, in this tea-growing business and always will be, so long as both countries have tea to sell." The logical inference from the foregoing proposition is surely that Ceylon should begin a campaign decrying Indian-grown tea just as China and Japan teas have hitherto been condemned for their inferiority to Ceylon tea ? But our good friend, Mr. William Forsythe, from whose letter we have taken the above extract, is neither logical in his argument nor correct in his figures. While regarding India as a "deadly rival," he yet urges her planters to get a tea cess. One would suppose, that *being a rival*—it would be very much better for Ceylon that India should have no cess and no means of advertising her products ? But the fact is Mr. Forsythe sees that any step forward, gained for Ceylon, is so much ground gained for the tea industries of both countries. Whether we will or no, Ceylon *has* to act more or less in co-operation with India in winning a way into markets where China and Japan teas still have a home. Far better, therefore, in place of treating our neighbour as a deadly rival, frankly to urge her to co-operation and endeavour to work shoulder to shoulder in conquering the Russian and the European markets and in advancing yet further, by means fair to all dealers, in the American Continent.

If it be the case that Mr. Forsythe, like his typical countryman, is spoiling for a fight and inviting a champion from India to tread upon his coat, we fear that he will find that he gives himself very much away in the figures for which he has made himself responsible. Where, for instance, has he got a million acres of tea in India ?—when, as a matter of fact the total area cultivated does not cover much more than *half* this extent. Then again the Indian champion's turn comes when he asks Mr. Forsythe to explain how it is—that of the 22¾ millions of Ceylon tea taken for foreign markets in 1901, in excess of Indian tea, by far the larger proportion —perhaps as much as 80 per cent—was taken for countries in which there has been no expenditure of cess money or only an infinitesimal beginning. We refer to Australia and Russia. We believe the Australian Colonies and New Zealand took 11 millions more Ceylon than Indian tea. That will leave only 11¾ millions of the excess to be accounted for. Russia accounts for a good deal more than half of this quantity. So that in reality the wonderful "advertising" enterprise of this little island is represented by not much more than four or five million lb. of Ceylon tea in excess of Indian tea taken by countries where the cess money has been expended. Will our good friend Mr. Forsythe kindly give consideration to these figures in his next letter and inform us what answer we should give to an Indian critic who might turn round and say : "I find that your advance in the export of your teas has been far larger to countries where

you have spent no money in advertising, namely Australasia and Russia, than in America to which most of your money has gone. To say the least, it surely requires some explanation, before you continue blowing your trumpet as to the great advantage which has been reaped by the action of the tea cess"?

"In any case when dealing with this subject, be quite fair, and show the figures not in the totals for all 'foreign countries', but with some discrimination as to countries exploited with cess money, and those where not a cent of such fund has been spent. Nothing can get over the eloquence of such figures as these :—

TO AUSTRALIA AND NEW ZEALAND.

Ceylon Tea exported in 1901 =	20,650,000 lb.
India ,, ,,	9,167,795 ,,
Excess for Ceylon :—	11,482,205 ,,

TO RUSSIA.

Ceylon Tea exported in 1901 =	9,609,734 ,,
India ,, ,, =(?)	3,000,000 ,,

SHADE-GROWN LEAF TOBACCO.

That the issue of shade-growing is still keenly canvassed, there is no denying ; it is equally evident, too, that opinion is veering towards conviction that the new industry has come to stay —even though it may never revolutionise present conditions. The action of the special committee in fixing May 1st as the date for the auctioneering of the Tariffville crops has caused considerable disappointment and much grumbling among growers who were awaiting the results of the sale before venturing into the business themselves. The only object of the Government and special experts who have the matter in charge was to secure a thorough and reliable test of this tobacco ; that when it came to be offered to the public it would be in the primest condition that care and the time limit would permit. This sale will be the most important test the product could be subjected to, and considering the interests at stake it was but wise to take all necessary precautions against premature cure and all the other incidental ills that tobacco falls heir to. To paraphrase the old Scottish proverb, the proof of the pudding is in the eating of it, and, of course, no amount of interested expert opinion will be taken too seriously until the tobacco itself has been thoroughly tested. That test it will be subjected to in May next, but in the meantime the subject is worth examining in all its bearings.—*Tobacco Leaf.*

CHINESE CASSIA LIGNEA.

A warning to German traders has recently come from China. The export-houses at Canton, both Chinese and European, have complained a good deal with regard to two principal articles of export —viz., cassia lignea and bristles. The sales in both these articles are on condition that good average of the season is shipped from China. Now it has been said during the last two years, for example, at Hamburg, nearly every shipment of the said articles has been found unsatisfactory, and has been arbitrated on. This has, of course, given great trouble to the agents of Chinese exporters, and if there is not found a remedy it is expected that the German markets will lose the business altogether in favour of Trieste.—*Chemist and Druggist,* March 1.

BOLIVIA AND ITS NEW TERRITORIES.

The United State's Consul at Para has transmitted to the Department of State a report on the recent settlement by arbitration of the boundary between Brazil and Bolivia. Under this settlement a large area of territory has been transferred from the former to the latter country. The report was made by the Hon. Florian Zambrano, High Commissioner and Financial Agent to the Bolivian Government, in answer to questions submitted, and the Consul says that the extent and value of the lands transferred to Bolivia, together with the desire of that Government to encourage colonization by means of subsidies, land grants, exemption from duties and taxes, and other special privileges, give the decision of the Commission a great importance. The part of the communication which deals with concessions to capitalists and colonisers will probably be found of interest to those who contemplate the opening up of relations or setting business terms in the territory in question. "The Government of Bolivia," it says, "grants large tracts of uncultivated land to capitalists who intend to colonise our territories; admits free of duty and other taxes all machinery, factories, tools, and agricultural implements, and protects and guarantees the personal safety, work, and property of all foreigners. In the high region, or rather the plateau of the Andes Mountains, there are rich mineral deposits. In the middle region wheat is cultivated and also the best Indian corn, potatoes, grapes, &c. On the great eastern and north-western plains coffee, cocoa, sugar cane, and many other tropical products are cultivated, and rubber, vanilla, &c., are extracted. There are also many gold mines and placers of incalculable richness. The rivers which the treaty with Brazil now incorporates into Bolivia are the Acre and Yacu with their affluents, the Upper Purus and Upper Jurua and their affluents. The rubber exported from the Acre and its affluents alone reaches 3,500 tons per annum. The total export of rubber from the other rivers just named amounts to another 5,000 tons per annum, and is increasing yearly. I am told that many rubber planters from the Acre wish to sell their plantations. The Government of Bolivia has decided to establish and subsidise a line of foreign steamers to ply between European ports and Para. There is no contract yet for this project, and the Bolivian Government is disposed to accept the best proposal which may be presented."—London *Times,* Feb. 24.

PLANT TREES,—brethren, in your mission compounds, in the unsightly spots and ungainly corners ; and plant valuable trees while you are about it. A friend told us last week of a tree said to be about three hundred years old, standing in one of the historic cities of Bengal, for which the present owner has recently refused R4,500 ! Unfortunately, the owner does not happen to be a missionary. The tree is a choice species of mahogany, every inch of the wood of which is of value. The man who planted it probably never dreamed of the enrichment he was providing for a far-down-the-line descendant.—*Indian Witness,*

CHINA TEA FOR RUSSIA.

It is stated that all tea coming to Vladivostock and Nikolaevsk is subject to a duty of 24 roubles the pood (50s. per 36 English pounds), while it has been decided that tea coming overland, *via* Dalny, shall pass into Russia entirely free of duty. Obviously this new enactment will create a very considerable amount of business for the Manchurian Railway.—*L and C Express*, Feb. 28.

PEARL TRADE IN AUSTRALIA.

HOW IT IS BEING HAMPERED: IN FAVOUR OF HOLLAND.

Brisbane, March 3.—Mr. James Clark, whose firm, Messrs. James Clark & Co., holds the largest interest in the pearl-shelling industry, was interviewed today in connection with the recent visit of the Dutch warship to Thursday Island. He stated that the restrictive laws of the Commonwealth, by prohibiting employers indenturing suitable divers from Japan, Manila, and the Malay Archipelago, were already cramping the pearl shell business, and unless some amendment is made to enable the employers to obtain sufficient suitable labour the industry would certainly be lost to Queensland. The best divers came from Japan, and before the federal enactment there was an agreement between Queensland and Japan permitting a certain number of Japanese to come here—about 200 per annum—and if this supply was stopped they would soon be compelled to relinquish operations for want of labour. The Dutch Government had established a training station at Meranke, and was endeavouring to secure a transference of the head quarters of the pearling industry to its territory. Unrestricted trading facilities were offered, and freedom for employment of coloured labour. As a greater part of the fishing was done beyond the Queensland three-mile limit, the pearlers would be enabled to work practically on the same ground as at present. Mr. Clark's firm employs 550 men, and is quite willing to go on as formerly if the Federal Government permits him to obtain the necessary labour. Otherwise there is nothing for him, he says, but to accept the offer of the Dutch, and become a naturalized subject of that country.—*Adelaide Observer.*

PEARL FAMINE IN LONDON.

A REMARKABLE RISE IN THEIR VALUE.

Pearls of great price are more than proportionately difficult to obtain just now. Moreover, they are likely to remain so for some considerable time to come. It is not that a lady desiring to obtain a valuable set would be unable to do so—only the price would probably be a memorable one. Why is there this remarkable rise in pearls? There has been no corner in them, though as a matter of fact Americans have been buying extensively in the wholesale trade of late, but this was only as a business speculation. At a famous Strand jeweller's a *Morning Leader* representative was told that for one thing the last yield of pearls had been a very poor one, and for another that pearls had been gradually increasing in value for the past thirty years. "And particularly in the last four or five years. And," it was added, "if I were to purchase pearls today I should reckon they would be 10 per cent. more expensive this time next year. Of course, if a customer wanted a set, they could always be got, though I have never known the price to be so high, and I am speaking for over thirty years. Still, there is undoubtedly a craze for them at the present time, and when the season commences there will be a bigger demand than ever, for Americans will have them at any price." —*Morning Leader*, March 3rd.

A FIND OF BIG PEARLS.

Twenty-five pearls, some as big as large-sized shots, were found in a mussel on Saturday by a fishmonger at Sittingbourne.—*Daily Mail*, March 3rd.

FOR AN INDIAN TEA CESS.

THE MEMORIAL TO THE VICEROY.

The following is the text of the Memorial that has been addressed to His Excellency the Viceroy and Governor-General of India by persons, firms, and Companies owning tea estates in British India:—

HUMBLY SHEWETH—That your Memorialists who are very largely interested in tea cultivation in British India, the gross total of which is now estimated to be some 520,000 acres, representing a capital investment of some twenty-five million pounds sterling, venture to approach Your Excellency with the following representations, in order, if possible, to enlist the good offices of Your Excellency's Government in aid of the efforts of the Indian Tea Association to raise funds by the imposition of an export duty on Indian tea the proceeds to be devoted to the work of pushing the sale and increasing the consumption of Indian tea, in countries other than the United Kingdom.

2. The course which your Memorialist urge should be adopted is one which has been followed for the last nine years in Ceylon, in which Colony an export duty on tea of 10 cents per 100 lb was levied in 1892, under the Ordinance No. 15 of 1892 of the Government of Ceylon, in order to provide the Ceylon planters with funds for the adequate representation of their Teas at the Chicago Exhibition of 1893. The application of the funds derived from this duty proved so successful that, in 1894, the temporary duty of 10 cents per 100 lb. was by the Ordinance No. 4 of 1894 of the Government of Ceylon converted into a permanent duty, the rate being increased from 10 cents to 20 cents per 100 lb., which it was directed should be applied towards increasing the consumption of Ceylon tea in foreign lands in such manner as might from time to time be desired and determined by the Joint Committee appointed by the Planters' Association of Ceylon and the Ceylon Chamber of Commerce, referred to in the last-mentioned Ordinance. The sum thus raised in Ceylon amounts on the average to very nearly R3 lakhs per annum.

3 In India, a voluntary levy for the same purpose, instituted and administered by the Indian Tea Association, is and has been in force since 1893, but the subscribers to that levy hitherto have not represented more than about 75 per cent. of the Indian tea growers, and the sum collected has been considerably less than half that realised under the Ceylon tax. The Indian tea-industry therefore has been compelled, through want of funds, to confine its attention mainly to the markets of North America, while Ceylon on the other hand has been able to make sustained efforts to satisfy and increase the demands for its teas not only in the American markets, but

also in the other markets in the world, with the result that India has only been able, owing to lack of funds, to make considerably less progress than Ceylon, the figures of last year showing that, while Ceylon, with a production of about 150 millions of pounds of tea, sent over 49 million pounds, or nearly 33 per cent., to foreign countries, India with a production of 190 millions of pounds sent only about 33½ millions, or about 18 per cent., to foreign markets.

4. Owing to the great increase in the production of Indian and Ceylon teas during recent years, the supply to the markets of the United Kingdom has been largely in excess of the demand, and it has only been possible to find an outlet for a portion of this surplus by a continued reduction of price, while the world's stock of British-grown tea has materially increased.

5. Taking the position as it at present stands, the result so far has been that the average price of Indian tea has been continuously falling until a considerable proportion is being sold below the cost of production, and it is clear that tea-growing in India on a remunerative basis can only be continued by comprehensive measures being promptly taken to open new markets.

6. Your Memorialists feel that it is unnecessary to enlarge upon the importance of maintaining the Indian tea-industry on a remunerative basis, as well because of the very large amount of capital embarked in it, as of the importance of keeping in cultivation extensive tracts of land yielding a direct revenue to Government, and providing large numbers of the native population of India with employment, and they submit that it is thus to the interest of the Government of India to render assistance to the tea industry, especially having regard to the fact that the assistance which it is the object of this Memorial to invoke will not involve any burden on the public revenues.

7. Past experience has shown that it is not possible by means of a voluntary levy to collect sufficient funds to carry on the work of developing foreign markets for Indian tea to anything like sufficient extent, and that no organisation is possible as a result of voluntary effort which will ensure uniform subscriptions being paid by all proprietors. Were the levy made compulsory, your Memorialists are confident it would be cheerfully paid by many who will not contribute to a voluntary assessment.

8. That such an organisation can be made effective is proved by the success of the measures adopted in Ceylon, the operation of which has been to ensure the provision of the funds which have enabled the Ceylon Tea-Industry, by fostering and developing foreign markets, to divert increasing quantities of tea produced in that Colony to such markets, and your Memorialists submit that, under the circumstances, the only practical means of attaining the end they have in view is for those interested in the Indian Tea-Industry to follow the example of Ceylon. This, however, can only be done with the aid of Government in the manner above indicated, and it is the object of this Memorial to interest Your Excellency's Government to render such aid.

9. Such a duty as that levied in Ceylon, if fixed at the rate of only one-fourth of a pie per pound of tea, would yield more than twice the annual amount which the voluntary cess has produced, or a sum approximately equal to that raised in Ceylon, and your Memorialists therefore suggest that the amount of duty levied on Indian tea should be at the rate of one-fourth of a pie per pound. This would produce a sufficient sum to develop new markets for Indian tea, as well as to promote its consumption amongst the natives of India. The importance of efforts in this direction, which Your Excellency has strongly urged upon the tea planting community, has been recognised by the Indian Tea Association having assigned for this object R40,000 of the comparatively small sum produced by the voluntary levy now in force.

10. Your Memorialists are not insensible to the fact that it may be urged as an objection to the course which they desire should be adopted that if they had taken precautions to restrict output, they would have provided themselves with a simple and efficient remedy for the evil of which they complain; but with reference to this they would urge that the rapid increase in the production of tea of late years is mainly due to the large extensions both in India and Ceylon, which were undertaken when exchange with Europe was at a low level. The closing of the Indian mints and the subsequent advance of exchange to 1*s* 4*d* had an adverse effect on the tea industry, and many tea estates, which with a low rate of exchange could have been worked to a profit, are not, as matters now stand, capable of earning sufficient to meet their outgoings, and must in time be abandoned and go out of cultivation, unless some change in the conditions of the industry can be brought about.

11. Your Memorialists also recognise that, in view of the fact that in India tea is shipped from several ports, while shipments from Ceylon are practically all made from one port, the collection of an export duty on tea such as they suggest would present somewhat greater difficulties in India than is the case in Ceylon; but they believe any difficulties on this score could be readily overcome with the co-operation of the Executive Department of Your Excellency's Government and without incurring any material extra expenditure. In Ceylon no charge is made for collecting the tea duty imposed under the Ordinances in force in that Colony, the whole of the duty collected being handed over to a Joint Committee—the "Thirty" Committee—of the Ceylon Chamber of Commerce and the Ceylon Planters' Association. The Government of Ceylon, however, reserve the right to see that the funds derived from the collection of the duty are not distributed otherwise than a manner likely to be beneficial to the tea industry, and your Memorialists venture to urge that in the case of the duty on Indian tea which it is the object of this Memorial to induce Your Excellency's Government to levy, a similar course should be adopted.

12. Your Memorialists desire to submit in support of the prayer of this Memorial that the proposal they have made is one which affects the Tea-Industry only, and that its adoption can have no adverse influence on any other trade or industry or on the community in general. The duty will be paid by tea growers and its proceeds will be expended by a Committee for the benefit of the industry at large. On the other hand, the increased prosperity which your Memorialists believe will result from the imposition of the proposed duty would ensure to the advantage of the State (without imposing any burden on its resources) in assisting an industry from which it derives a considerable revenue, and which provides employment for large numbers of the people of India.

Your Memorialists humbly pray Your Excellency to take this Memorial into consideration with a view to the necessary measures being adopted to provide for the levying of an export duty at a rate not exceeding one-fourth of a pie per pound for a limited period of five years on all tea exported from India, and for the amount of the duty so to be levied being applied towards increasing the consumption of Indian tea in India as well as in countries outside the United Kingdom, and otherwise in such manner as may from time to time be desired and determined by a Committee to be approved by Your Excellency's Government; or that such other measures may be taken as Your Excellency may consider practicable to give effect to the wishes of your Memorialists as herein expressed.

And your Memorialists as in duty bound will ever pray, etc.

[Signed by 392 persons and firms having under tea cultivation a total of 380,604 acres.]

CRUDE RUBBER.

EXPLORATION, PLANTING AND CULTIVATION NOTES.

The *Tropenpflanzer* publishes in a private letter of the director of the Botanic Garden in Victoria (Cameroons) the interesting fact that trees of seeds of *Kisia elastica* planted there in November, 1898, are now already three metres high and begin to bloom, and contrary to Hevea, give their milk very easily. The Heveas planted there have now already fruits ; the real *Ficus Vogelii* supplies good caoutchouc in plenty. Also *apium-utile* exists in a few species in the Garden. Dr. Preuss reports from the Moliwe plantation that the Castiloas, which are there in great quantities, flourish well, but not the Kixias. *Mascarenhasia elastica* and *Tabernaemontana Donnell Smithii*, which might become a useful gutta-percha plant, also grow well. There were only a few species of *Pavena Deerii* and a few Hevea trees. As the Castilloa grows well, according to the report of the late Mr Stamler, chief planter at Moliwe, the Plantation Company had ordered, at the suggestion of Professor Warburg and through the aid of M. Koschng 400,000 Castilloa seeds from Costa Rica in this year. The greatest part of these seeds received in Hamburg perished in the long voyage, but it is hoped that after all it might still be possible to send 100,000 Castilloa trees this summer in a living state to the Camerooons.

The caoutchouc export from Iquitous, in Peru, amounted in 1900 to 859,327 kilos, value 2,245,138 sols. The chief qantity has been shipped to Havre, with 576,615 kilos, and the rest of 282,712 kilos to Liverpool. These figures consist of the following rubber descriptions :—Jebe fino, with 296 828 kilos, value 941,943 sols; Jebe entrefino, with 21,988 kilos, value 64 498 sols ; Sernamby de Jebe, with 142 992 kilos; value 352,714 sols ; Caucho, with 81,950 kilos, value 134 959 sols ; Sernamby de Caucho, with 315,500 kilos, value 751,033 sols. The Rio Javary district exported last year 528,313 kilos, value 1,538,047 sols. Of this 374,116 kilos, with a value of 1,187,195 sols, were Jebe fino ; 9,325 kilos, value 27,553 sols, Jebe enterfino ; 95,571 kilos, value 235,742 sols, Sernamby de Jebe ; 40,335 kilos, value 66,418 sols, Caucho ; 8,966 kilos, value 21,339 sols, Sernamby de Caucho. The average prices during the last two years were as follows :—

VALUE IN SOLS.

Kinds.	1st half. 1899.	1900.	2nd half 1900.
Jebe fino	51	52	43
Jebe entrefino	48	48	37
Sernamby de Jebe	42	42	30
Caucho	30	30	20
Sernamby de Caucho	43	42	30

The prices stand for one Portuguese arroba of fifteen kilos, and one sol may be counted as 2s. The caoutchouc export from Iquitos and the Javary district taken together amounted in 1900 to 3,785,185 sols against 2,889,402 sols in the preceding year. The caoutchouc harvest in Iquitos was still worse in 1900 than in 1899. That in spite of this the export values of Iquitos were nearly the same as in 1899, is due to the fact that last year more people were employed in getting fine rubber than in 1899. In the district of Rio Javary, on the other hand more rubber was produced than in 1899. The weather was more favourable to the rubber gatherers in this district than in the Ucayali regions. From a report of the Imperial Vice Consul at Iquitos.

Caoutchouc of *Manihot glaziovii* from a plantation in the German East Africa, has been tested by the Colonial Economical Committee, and proved to be of a good quality of white colour, and good elasticity. The chemical test resulted in 89·5 per cent of first-class caoutchouc and 1·7 per cent of second quality.

Mr H Lecomte has published in No. 4 of the "Bulletin du Museum de Paris" an interesting article on this question,—the coagulation of caoutchouc (latex)—which is the result of observations made during his voyage to the Congo in 1893 and 1894. He made a study of three different kinds:—

Ninga—*Landolphia owriensis Pal. Beauv.*
Malombe—*Landolphia florida Benth.*
Zaon—*Landolphia Klainii Pierre.*

The first one gave a good product, the second a useless product, and third a good caoutchouc. The results of these processes by M Lecomte showed quite distinctly that the phenomenon of the coagulations is closely adapted to the special nature of the latex, and it is therefore necessary to find out which medium is most suitable for each special latex. According to Mr Lecomte's experiments the heat seems to be the best active coagulator for these two *Landolphia*. If the water is well removed a caoutchouc of a white colour will be obtained, which remains without becoming odorous, and which is due to the absence of albuminous substances in the solution.

For some time the sales of the rubber coming from French Guinea have been much smaller, This depression is due to several causes, to counteract which the "Permanent Committee of Trade and Agriculture in French Guinea" have issued the following regulations :—1. Adulterated caoutchouc is prohibited from being exported. 2. Adulterations are taken to include moist sorts of rubber, caoutchouc mixed with roots, glutinous rubbers and those which contain other strange materials than particles of the bark incorporated during the process of obtaining the rubber, and of these not more than about one per cent. of the total weight. 3. Neither the Custom House offices on the frontier, on the coast; nor in the country can in consequence allow any caoutchouc of the above description to pass for shipment to Europe. By these vigorous means the authorities hope to raise the reputation of the Conakry caoutchouc, which has much deteriorated in price in the European market, whereas its neighbours enjoy a much better reputation.—*India Rubber and Gutta Percha Trades' Jorunal*, Jan. 20.

Culture in Peaty Soil.—A discovery of M Dumont which may be useful in Ireland and Scotland, where peaty soils are common, is given in the *Comptes Rendus* for December 23 ult. It is to add carbonate of potash, or matter able to form this by double decomposition, to the soil. The carbonate renders the humus nitrifiable, and favours the action of ammoniacal ferments or manure, making the soil fertile. A paper by M M. Deherain and Demoussy in the same number shows that truffles can be grown in peaty soil when lime and potash are added, and the soil is inoculated with garden bacteria.

THE MARKET FOR CARDAMOMS.

A sale of 200 cases of cardamoms last week had no depressing effect on the market, and, in spite of the heavy catalogues, a considerable quantity changed hands at an advance of 1d to 2d per lb. The shipments in 1901 amounted to 59,704 lb, against 537,455 lb in 1900 and 499,959 lb in 1899. What this year's total will be, the future alone will show. If any estimates were obtained of the probable planting area, some idea as to the total yield might be formed. Will 6,000 acres, or even more, be devoted to the cultivation of cardamoms? In 1898 the planting area was counted to be a little over 5,100 acres, whereas in 1856 not a single acre was planted with the berry. Since then proprietors of tea gardens have recognised the value of cardamoms as a by-product to tea, and they have expended no end of time, money, and ground on their improvement, with the result we have seen in today's auctions. A beautiful berry, well clipped, excellently bleached, and full of rich seed is, says the *London Commercial Record*, not obtainable at a considerably cheaper price than demanded for the old fashioned Malabar sorts from East India. Ceylon has cut the ground from underneath the Indian rival, who has almost become a thing of the past, although the delicacy of flavour which these berries possessed will remain in our memory, for it will hardly ever be reached by the Ceylon descriptions. —*Home paper*, Feb. 28.

MISSION WORK ;—AND IRRIGATION.

(*Extract from a letter of Sir J. J. Grinlinton.*)

Feb. 20th, 1902.

The very interesting article in the daily *Observer* of 1st February (headed "India at the end of 1901: some recollections"—or rather I should have written reflections—"on notes by the way" during a trip of 6,000 miles) has caused me to feel that I must give expression at once to the feelings uppermost in my mind. I regret that I have never been in India proper, but my life in Ceylon has enabled me to follow most of your remarks, more especially your "firm belief" in the progress of Christianity amongst the natives of the country where the Missionaries have been steadily working for years. One of my last acts as a public man before leaving Ceylon was that of presiding at the annual gathering at that beautiful little spot, Cotta, where the Church Missionaries have been at work for many years. My recollection of the place, when I was a young fellow and took but little interest in Missionary work, enabled me to contrast the two periods, and I took the opportunity of doing it to the people themselves. In the earlier period I noticed only very few Sinhalese mothers taking part in the service with their children, but on the last occasion I was unable to count the mothers and grown-up girls: they were so numerous, and all took part in the singing which had been taught them by our lamented friend, the Rev. S. Coles, who was then present and looked so happy in leading the singing. The large open building was full of bearded men who had been educated at Cotta and hundreds had to remain outside the building. It was indeed a pleasant sight, and left a deep impression on me; so much so that I have often since then, in public and in private, narrated the circumstances. The influence brought to bear on CHILDREN BY MOTHERS WHO HAVE BEEN TAUGHT IN THE MISSION SCHOOLS is great, and it is only when two or three generations have been so educated that one sees the great advantage, as well as the manifest progress made in Mission work—and the improvement in the intelligent *look* of the people.

Your allusion to irrigation naturally attracted my attention. India led the way in this during the great General Cotton's time, but during recent years comparatively little has been done, but I am thankful to say that in Ceylon great progress has been and is still being made. Through the courtesy of the Governor the Minutes of the Irrigation Board are regularly sent me. Not alone does Irrigation enable good food to be obtained by the poorer people who live in places remote from towns and "highways," but it supplies them with *good water* instead of the filthy water they had during dry seasons in former times.

BIG GAME IN THE STRAITS.

LARGE ELEPHANT SHOT BY MR. EPHRAUMS.

Galle, March 20.

Mr Lennie Ephraums, Manager of the New Oriental Hotel, has just heard from his cousin Mr Cyril Ephraums, the well-known sportsman in the Straits to the effect that he shot another big elephant on the 27th February. The tusker was bagged 13 miles from Seramban in an abandoned coffee clearing in dense undergrowth, and was tracked for 2 miles when he came to him quite quietly. The animal was bowled over with a single shot from an 8-inch bore rifle, 12 drachm of powder and 2½ oz. steel tipped bullet. He received the shot about 3 inches above the left eye, dropped in his track and never moved again. The tusks are described as a lovely pair and very fine ivory. The measurements are:—Total length including tail 21 ft 4 in; from tip of forehead to base of tail 10 ft; ear to ear-tip to tip 9 ft 9 in; breadth of skull 3 ft; circumference of foot 3 ft 6 in and height 9 ft 4 in.

MR. ALEX. WHYTE, F.Z.S., &c.

This well-known Naturalist, formerly of Kandy, and latterly so much identified with East Africa has, we learn, just left England for Uganda, delighted to get away from this wretched English climate,—his five months' holiday having mostly been spent in a sick room!

CEYLON PLANTERS' RUBBER SYNDICATE.—We publish on page 678 the report of this Company and the proceedings at the annual meeting on 28th Feb., when it was resolved to raise the nominal capital to R250,000, as the funds at present are insufficient to carry on the work of the estate. During the autumn it is proposed to raise 80 new shares at par to go to existing shareholders in proportion to their holdings. Liberian coffee seems to be well thought of, and it is expected that from the beginning of 1906 the estate should be self-supporting. Only 350 acres have been planted, and the reason, it appears, for the whole area not having been planted is that bad seed was secured. Catch-crops have not been a success and it is now proposed to do away with all these except coffee.

PLANTING NOTES.

"TALGASWELA" AND THE WORKING OF A TEA COMPANY'S ESTATE.—The letter we publish elsewhere from "Critic" will be useful to others pursuing the same vocation as he. The gist of our correspondent's remarks is that the superintendent responsible for expenses should have full freedom of action in obtaining his materials, so that his responsibility should be in no way nominal—a fairly reasonable plea.

BUDDING ORANGES.—Some advance has been made in the propagation of the imported kinds of oranges during the present year, and a fairly good stock of strong budded plants is now on hand. This it is trusted will do away with the complaint so frequently heard of oranges proving sour when raised from seed, a case of which occurred during the present week. The stock used is that of the Seville orange which does not suffer in our climate from stem rot or Mal-di-gouma, as do the best of our St. Michael's and Tangerine kinds. The "Washington Navel" is among the varieties successfully budded. These plants will, of course, be put on sale in the Nurseries as soon as a sufficient number are on hand to meet the demand. I learn that in some instances the pupils who attended the Agricultural Lectures are meeting with fair success in budding and grafting.—*Trinidad Bulletin.*

GREEN TEA PROSPECTS IN CEYLON.—A planter of wide experience writes:—

"The green tea bonusing requires watching on the part of the 'Thirty Committee.' So far as it goes Messrs. Finlay, Muir & Co.'s agency for the American Green Tea Syndicate appears to adopt the method that will meet the requirements for the green tea bonus. Some rumour has got about that green tea is being used by the blenders in Colombo to mix with black, this green tea having received the bonus from the Cess. This may account for the exports of green tea not tallying with what has been paid by the Planters' Association on green tea invoices. The green tea factory is at work at Nawalapitiya. It is rumoured that they are purchasing 1,000 lb. of leaf daily. The factory is supplied with excellent rollers and driers driven by an old machine, steam roller, supplied by a *boiler*, for steaming the leaf."

COCONUT PLANTING IN FIJI.—Mr. V. H. Tarte, who left Ceylon this week (after nearly a month's visit) on his return to Fiji, visited Goluapokuna Coconut Estate and saw there the typical methods of local cultivation, which he said offered a great contrast with Fiji. In Fiji, he said, practically nothing was done in the way of manuring, artificial or otherwise. The Fiji trees tapered to the top and did not bear such fine nuts perhaps as our finest—though their natural growth showed quite as well on the average. On learning the very little extra expense, Mr Tarte became determined to go in for manuring when he got back to Fiji and promised to inform us of the results. There was a thoroughly adequate market, he told us, for all the coconuts (and copra, especially) that Fiji could produce—Messrs. Lever Bros., for one instance, having secured practically all the crops they could contract for up-to-date.

KELANI TEA GARDEN CO.—No dividend has been declared for the past year, but a substantial balance has been carried forward, and we think the shareholders have every reason to be very hopeful.

MR. R. V. WEBSTER—is now, in all probability, Visiting (Land) Agent for the Transvaal Government. His communication elsewhere gives information of leading interest to Ceylon planters who may be looking towards South Africa.

FUNGUS ON CACAO.—We have received a monograph on Diplodia cacaoicola, P Henn.; a parasitic Fungus on sugar cane and cacao in the West Indies by Albert Howard, B A., A.R.C.S., F.L.S., Mycologist to the Imperial Department of Agriculture for the West Indies, late scholar of St. John's College Cambridge, with plates.

PLANTING IN FIJI.—Ceylon planters will find further valuable information on planting in Fiji in our issue. Bannanas appear to be the simplest and least troublesome product; cacao gives promise; vanilla is abundant, but is scarcely taken seriously; tea, we are glad to note, does not receive great attention, though there is little against it, beyond "over-production"; and tobacco grows very well, requiring nothing but the opening of more land. This does not exhaust the list, but gives a fair selection.

PLANTING IN JAVA: COFFEE, CINCHONA, AND SUGAR.—In the colonial report recently published, the Java Government has stated its views about the coffee cultivation. The intention is to encourage the free cultivation in the same manner as was already done in the residencies Passoeroean, Probolingo, and the Preanger, namely, by allowing a restitution per bouw to be divided on the three first years of the coffee plantation, but with the necessary caution, and only on such estates as promise a proper production for a long time. As regards the compulsory cultivation and the delivery of coffee, there is only an unimportant increase to be observed in Tagal, Pekalongan, and Madioen during 1899 to 1900. Of the other 11 districts more or less of a decrease is to be reported. The decrease in the leaf appeared in 1900 in all districts. Both in 1899 and 1900 the out turn of the Government's coffee crop remained under the estimate. The Government's cinchona cultivation has shown a satisfactory result owing to the advance of prices. The quinine market at Batavia has exceeded the expectations in 1900 and for 1901; still better results were expected. Referring to the economical condition of the natives the report says the amounts paid to them by 137 sugar manufactories in 1900 amount to a total of more than 33,000,000 guilders, being about fl241,000 on the average for each manufactory. In the meantime a petition of the principal firms and companies at Amsterdam, Rotterdam and The Hague, concerned in the Java sugar cultivation, has been sent to the Minister for the Colonies, asking for a temporary reduction of the railway freights for the article. Java sugar is again passing through a serious crisis. In 1900, 22 manufactories of the Netherlands India Agricultural Company fetched a price of fl6.74 per picul without interest on shares and bonds but including the expenses for the improvement of the manufacture.—*L. and C. Express*, Feb. 28.

TO THE PLANTING WORLD.

Seeds & Plants of Commercial Products.

Hevea Brasiliensis.—Orders being booked for the coming crop August-September delivery 1902, booking necessary before the end of April, quantities of 100,000 and over at special low rates. Plants available all the year round, 100,000 and over at special low rates. A leading Rubber planter in Sumatra, who purchased 50,000 seeds in 1899, and 100,000 in 1900, writes us, under date 15th November, 1900:—"I received your letter of 20th October, from which I learn that you added another case of 5,000 seeds to replace the loss, &c. I am satisfied hereby, and even after this adding I am satisfied by the whole delivery of this year." Special offer, post free on application.

Castilloa Elastica.—True superior variety cultivated in Mexico, seeds from specially reserved old untapped trees. Orders booked for August-September delivery 1902, immediate booking necessary; large quantities on special terms; Plants in Wardian cases.

A foreign firm of Planters writes under date 11th October, 1901:—"We beg to enquire whether you would procure us 100,000 Castilloa seeds, in which month we might expect them, and what would be the average price." Special offer, post free on application.

***Manihot* Glaziovii.**—Seeds and Plants available all the year round, 100,000 and over at special low rates. A Mexican planter in sending an order for this seed wrote on the 22nd August, 1900:—"If they arrive fresh and germinate easily I may send you larger orders, as they are for high ground where the Castilloa does not thrive."

Ficus Elastica.—Seeds available in May-June; booking necessary before the end of March; also plants.

***Mimusops* Globosa** (Balata) wood of the tree is much sought for buildings, fruits sweet like a plum and eaten, oil from seeds, said to yield as much as 45 lbs. of dry rubber per tree per annum, the milk is drunk and when diluted with water used as cow's milk, grow from sea-level up to 2,000 feet, orders being booked for seeds and plants, price on application.

Cinnamomum Zeylanicum (Cinnamon superior variety).—New crop of seed in April to June; booking necessary before the end of February; also plants.

Coffee Arabica, Liberian Hybrid and ***Maragogopie* Hybrid.**—New crop March-April; immediate booking necessary.

A foreign Agricultural Department writes dating 9th September, 1901:—"Please accept our order for 175 lbs. of Tea seed and for 2,000 Coffee beans. In regard to Coffee seed I would say that this will be the first importation made by this department, and we will leave the selection of the varieties to be sent to your judgment."

OUR DESCRIPTIVE PRICE LISTS.

The following six Descriptive Price Lists are now being forwarded with Circulars and special offer of Seeds and Plants of Rubber and other Economic Products:—

1. Tropical Seeds and Plants of Commercial Products, enlarged edition for 1902.
2. Seeds and Plants of Shade, Timber, Wind-Belts, Fuel, and Ornamental Trees, Trees for Roads-sides, Parks, Open Spaces, Pasture Lands, Avenues, Hedges, and for planting among crops (Tea, Coffee Cacao, Cardamoms, &c.)
3. Seeds and Plants of Tropical Fruit Trees including Mango grafts.
4. Bulbs, Tubers and Yams.
5. Orchids—Ceylon and Indian.
6. Seeds and Plants of Palms, Calamus, Pandanus, Cycads, Tree and other Ferns, Crotons, Roses, Dracinas, Shrubs and Creepers.

Special Arrangements made with foreign Governments, Botanical and Agricultural Departments, Planters and others for supplying seeds and plants of Commercial Products in large quantities.

"SOUTH AFRICA."—The great authority on South African affairs of 25th March, 1899, says:—"An interesting Catalogue reaches us from the East. It is issued by WILLIAM BROTHERS, Tropical Seed Merchants of Henaratgoda, Ceylon, and schedules all the useful and beautiful plants which will thrive in tropical and semi-tropical regions. We fancy Messrs. Williams should do good business, for now that the great Powers have grabbed all the waste places of the earth, they must turn to and prove that they were worth the grabbling. We recommend the great Powers and Concessionaries under them to go to William Brothers."

Agents in London:—MESSRS. P. W. WOOLLEY & Co., 90, Lower Thames Street.

Agent in Colombo, Ceylon:—E. B. CREASY, Esq.

Agent in British Central Africa:—T. H. LLOYD, Esq., Blantyre.

Telegraphic Address:
WILLIAM, HENARATGODA, CEYLON.
Liber's, A.I. and A.B.C. Codes used.

J. P WILLIAM & BROTHERS,
Tropical Seed Merchants,
HENARATGODA, CEYLON.

Correspondence.

To the Editor.

PLANTING IN FIJI: COFFEE, CACAO, TOBACCO, TEA, &c.

March 14.

DEAR SIR,—You will recollect the letter in your *Observer* issue of 21st November, 1901 from a Fijian correspondent and the useful information you supplied regarding Fiji, three days later. Having lately had a long and courteous letter from the same gentleman, I purpose giving you a few extracts from it for the purpose of placing before such of your planting readers as may be seeking "pastures new," a truer version of the state of affairs in Fiji today than we are accustomed to hear in Ceylon; our information being taken from the experience of men who went there 20 and 15 years ago and had to leave it, disgusted with the ante-European governments of Sir J B Thurston etc. All that is now changed. And here is what he says:—

"I regret to say that in the whole of this group there is not a single planter or a plantation such as is understood in Ceylon but the country is crying out for good men with a little money and I know every possible assistance will be given by the Government and Banks to proper *bona fide* planters who may come here.

"Under the late Sir J B Thurston's administration everything was done to check and baulk the influx of Europeans but that order of things has passed. We have now new lines of steamers and shall have cable communication before the end of 1902.

"You have probably been told that coffee had leaf disease here; soil may possibly have had—but the principal grower 20 years ago fell out with the Governor, Sir J B Thurston, and the estate was destroyed by order of the Government, more out of personal enmity than because of the leaf disease! Another small coffee planter who had not satisfied the native owners of land, lost all his coffee; but we happen to have as neighbours the very natives, who declare that, to get rid of him, they filled bamboos with salt water and irrigated his nursery and young plantations with it at night. All I can say is, let any one come and see the coffee growing wild and the cacao too. My brother and I have put in the first 100 acres of cacao in Fiji with seed and plants obtained from the Government Botanic Gardens, and the present administrator and all residents are mostly interested in the growth and progress of this, because very high returns are being made in Samoa from cocoa. This is the only small patch in Fiji being propagated commercially but there are some thousands of single trees scattered through the group and growing in native villages, giving immense returns per tree.

"Unfortunately we cannot give all our time to the cacao as we have to make expenses out of the shipment of bananas, which also act as shade to the young cacao, and are now more than paying all costs. There are some 20 or 30 banana planters who grow nothing else. The largest of these has under 500 acres, and one and all know little of the plant they cultivate, nor do they study the question. They stick in a sucker and wait 9 to 15 months for the fruit, where a Ceylon man would thrash out the matter and find out the banana most suitable for the country and the market and ascertain how to produce large healthy bunches of uniform size, etc.

"Coffee, pimento, vanilla, pines, rubber, and all citrus fruits are thriving splendidly on our place. Vanilla grows wild everywhere; it has been introduced in the group, but only one planter cures it at present. Rice cultivation was started 3 months ago and promises well, and cardamoms were introduced last month and seed just germinated.

"Tobacco is first-class but we have only one maker. All the cigars sold here are manufactured in the group but they are not sufficiently made to export. Copra—very little—is being planted, all the present owners of copra estates having bought in at nominal figures 10 years ago when the price dropped and the few enterprising men could not afford to hold on; but prices are good now and there is much money in copra (coconuts).

"Personally I know nothing about tea but, as far as I can judge, I should leave it alone in favor of copra, cocoa or coffee. There is only one tea estate managed by a man from Ceylon and owned by a storekeeper who is desirous of selling, as he has other interests to attend to. It is 600 acres, of which 300 are planted up (age not stated). Their out-put is about 40,000 lb. per annum but they can barely supply the local demand. All Fiji-grown tea is protected by a duty of 6d per lb. The above is a good going concern with modern machinery and is run by Indian coolies indentured."

I gather from my correspondent that there is not the slightest use in going to Fiji on the chance of picking up employment as a planter, but to one who has a little capital and a fair knowledge of planting there is every prospect of success. I am not at liberty to disclose publicly all of my correspondent's letter—and this is not an advertisement, but is meant for the benefit of those planters who are obliged to look out elsewhere—at the same time I shall be glad to give any further information in my power.—I am, dear sir, yours faithfully, MACARONI.

"KAINIT": A NEW MANURE FOR COCONUTS.

Colombo, March 18.

DEAR SIR,—We beg to hand you enclosed copy of our leaflet. The value of Kainit which we think will be of interest to all your readers of the planting community. Kainit should prove a great success with all those who grow coconuts and keep cattle, etc. The experiments made at home are a striking proof of its use in connection with farm manures.—We are, dear sir, yours faithfully,

FREUDENBERG & CO.

[We quote one paragraph, and further particulars will doubtless be supplied to enquirers, by Messrs. Freudenberg & Co.:—

"Kainit" prevents the loss of nitrogen and humus matter. A considerable amount of nitrogen and humus matter is lost when farm manure lies in large piles exposed to the air for any length of time. This loss can be prevented by scattering Kainit over the piles. The cost of Kaini

used will be very much more than balanced by the nitrogen saved. The yearly manure product from one cow contains 27·5 lb. of *nitrogen*, or as much is contained in 176 lb. of nitrate [of soda. How important then to take every precaution to prevent its loss, especially in Tropical countries, where the stable manure decomposes very quickly.
—ED. *T.A.*]

THE TALGASWELA COMPANY MEETING.

Colombo,, March 19.

DEAR SIR,—Mr Christie at the Talgaswela meeting certainly made out a case of the Company paying over the nose for estate work and materials supplied. What I cannot understand are the explanations given by the Directors. The accounts are correct. Every item has been paid. Examine the accounts for yourself; there they are, and the few minutes Mr Christie had, looking over them, disclosed to him charges he thought in excess of what was correct, and a number he named. He says in December last the Company paid R325 per ton for its tea-lead. This must surely be a mistake? Mr Christie states he could have purchased it in December for R310. I think he is right, as I myself purchased under a ton at R307·50 per ton, discount if paid within the month; so it's really R300 a ton, net. I purchased in January (early) at R292·50, discount it paid within the month. So Mr Christie must be taken as correct, with his price stated at R310 as the highest. Why do not the directors enforce purchase of tea lead, boxes, rice, all materials necessary, through their superintendent, who has an interest in keeping expenditure down? I know many superintendents who purchase their own supplies; but what I say is, when a manager sees, say, tea lead sent to him at R20 or R25 in excess of what he himself could buy it, he gets disheartened, and apt to get careless of keeping his own estate expenditure down to what it ought to be. Someone will say it is the fault of the manager, who ought to advise the Agents of what he himself could do, and ask if there had been no mistake in the price. Would it not bear better to allow the Superintendent. a free hand? CRITIC.

GREEN TEA FOR CANADA.

Peermaad, March 19.

DEAR SIR,—The enclosed copy of a letter from Mr. Larkin may be of interest, as it shows Ceylon advertisement is beginning to pay in Canada. The only mistake is that we started our prices *too low*, and it will be difficult to raise them. However, if Japan's are once driven out, I hope prices may rise in Canada. I have applied for a patent in Ceylon and India for a new machine which will make green tea manufacture much less trouble. Indeed one machine is made and purchased by the Baraoora Tea Co., Sylhet, who have now two of my steamers. This new machine is intended to take the moisture off the steamed leaf without having to evaporate it as at present. Should the patent be granted the machine will be advertised. It is 3 months since I applied for a patent and as yet I have had no reply.—Yours faithfully, H. DRUMMOND DEANE.

(True copy.)

"Salada," Ceylon Tea, Toronto, Feb. 10, 1902.
H. Drummond Deane, Esq.

DEAR SIR,—We received your letter some two weeks ago and have been waiting anxiously for the arrival of the samples. These came here on Friday last and we have given them a great deal of attention, and we can say with pleasure that we have seen nothing better in the cup and nothing equal to them in style, and they are particularly well adapted to the Canadian and United States trade, and should you see fit later on to send us a small consignment, we will pay you the best market price for it. It would be better, though, to make the shipment small at first when we would have something to work on, but you can well understand that the public on this Continent, being educated up to asking for Ceylon tea, and Ceylon tea only, hardly know of India being a tea-bearing country. Practically all the advertising that has been done in America has been done by Ceylon and they have to a considerable extent created a demand for their tea and, therefore, the wholesaler is not willing to pay the same price for an Indian as he would for a Ceylon of the same quality, as it is considerably more trouble to sell the retailer who is ignorant of quality and whose customers ask for Ceylon tea. Yes, we take both "The Indian Planters' Gazette" and "Indian planting and Gardening," both of which we read with considerable interest. We hope with you that the endeavour to bring about a Tea Cess in India will be successful, as we believe that a portion of it being spent on this Continent would greatly increase the demand for Indian and Ceylon Tea as the qualities of these teas, both black and green, warrant us in believing that sooner or later they will drive out China and Japan tea entirely from this Continent. We might say in Canada today there is practically no China tea imported, the demand being entirely for Ceylon, and we are also making great headway with the greens. We regret that the samples of Ceylon greens did not reach you. We are sending now another set of two. These teas were made on a very low-grown estate in Ceylon, Devalakande; yet you will see they, being well made, are excellent green teas. They were the only two lots in this invoice and their cost laid down here 6½d, but the garden has no more to sell now, having contracted ahead with some other firm for some months; we having cabled them an order for 500 chests, that was their reply. In the invoice we are sending you, there were two-thirds of the No. 2 grade and one-third of the No. 1. I will, in the course of a few days, send you samples of a small invoice of Indian greens that I purchased recently. They are made on the Manabarrie estate in Dooars. The only sample I have at the moment are the ones we purchased on, but as soon as the teas arrive samples will go on.—With kindest regards, we are, yours truly,

(Sigd.) P C LARKIN & CO.

SOUTH INDIAN GREEN TEA IN CANADA.—We are glad to learn elsewhere of the excellent reports that Mr. H Drummond Deane, who may be called the pioneer of green teas in South India, has received from a leading Canadian firm. Planters will also learn with satisfaction the further information that Mr. Deane has in hand, a new machnine which will greatly reduce the trouble at present experienced in production.

DONNYBROOK TEA COMPANY, LTD

REPORT OF THE DIRECTORS.

Your Directors submit herewith a Statement of the Accounts for the year 1901, duly audited.

At last report the capital of the Company stood at R171,600.

being 1,026 Proprietors' Shares,
and 690 Finance Shares

The Excess Expenditure for 1901 has been met by the further issue of 30 Finance Shares and 70 Cumulative Preference Finance Shares, bringing the capital of the Company up to R181,600.

ACREAGE.

The acreage of the Company's Estates are as follows :—

Tea in full bearing	.. 7	—	
Do	.. 40	37	planted in 1894
Do	.. 13	—	do 1895
Do	... 52	—	do 1896
Do	.. —	86	do 1897
Tea in partial bearing	... 25	22	do 1898
Tea not in bearing	... 15	—	do 1899
Do do	... —	7	do 1900
	152	152	acres

Making 304 acres cultivated in tea—
4 acres forest
67 acres Chena, Patna and waste land,

which totals 375 acres as per the Company's Books.

The estimated crop for 1902 is 200,000 lb. Green Leaf, being 177 lb. tea per acre on the 282 acres over 3 years old. The estimated expenditure shews an excess of R4,400 over receipts.

Mr. W Shakespeare retires from the Board by rotation, and is eligible for re-election.

The appointment of an Auditor for the current year rests with the meeting.

THE NAHAVILLA ESTATES COMPANY, LIMITED.

THE DIRECTORS' REPORT

was next submitted as follows :—

In presenting a statement of the accounts of the Company for the year ended 31st December, 1901, the Directors beg to report as follows :—

The conditions attendant on the production of Crop were very adverse compared to those of the preceding year, more particularly towards the latter part of the season.

The yield of Tea in consequence fell short of estimate, and was 15,134 lb. less than the crop of 1900, namely, 524,840 lb. against 539,974 lb.

Owing to an unfavorable turn in the market at one period of the season, the price per pound realised for the produce was also somewhat less than last year, namely, 34·84 cents against 35·42 cents, a difference of a little over half a cent.

Coffee, upon which much reliance cannot now be placed, was also deficient in quantity, and sold for R3,181·35 less than the previous year.

A short crop generally means a relatively high cost of production, but in this case it works out at 28·00 cents per pound as compared with 29·42 cents last year. There has, however, been very little manuring done this year.

A sum of R43,978·61 appears as surplus of Revenue over Expenditure. Out of this has been paid R12,375·87 for interest on mortgages, and R3,500·00 has been carried to a Depreciation Account.

After payment of Superintendents' Bonuses, Secretariat and Auditor's Fees, &c., there remains at Profit and Loss Account a sum of R21,592.17 to be disposed of.

The Directors recommend the payment of a Dividend of 2¼ per cent on the paid-up Capital of th Company. This will absorb R9,912·50; and th balance after payment of Directors' Fees they propose to carry to Extension Account to go against the further Capital outlay.

Owing to the deficiency of Capital at the outset of Company, development out of revenue still has to go on though not to such a large extent as of late years, during which demands have been heavy. It was mentioned in last report that R30,000 was estimated as the further capital outlay required, and nearly a third of that has been spent this year.

The most pressing need, not yet estimated for, is the installation of Water Power for the Factories on Ury and Nahavilla. Mr J M Mason, when forwarding the last Visiting Report on these properties, writes as follows :—

"You will notice that I have written rather fully on the subject of water power for both Factories. If the Funds can be raised, I think it would be good policy to erect Pelton Wheels on both places, Personally, as a Shareholder I would willingly forego any dividend this year, if by so doing the water power installation could be put through at once," "so convinced am I of the benefit of doing so."

There is no doubt that it would effect considerable economy in the working. Firewood for the Engines becomes daily more scarce and distant, and consequently increased in cost. The Directors propose, therefore, to put the work in hand as regards one, if not both Estates, as soon as finances allow.

The condition of the several Estates is favorably reported on, and the Tea Crop for the coming season is estimated at 597,500 lb. costing R156,241, or say R27·82 cts. per lb. Besides this the sum of R11,216 is set down as necessary expenditure on Capital Account, namely, for Machinery on Nahavilla, Fans on Ury, and Road Instalment on Galella.

ACREAGE.

	Nahavilla.	Ury,	M P G.	Galella.	Total.
Tea in full bearing	317	375	217	287	1,196
,, ,, partial bearing	48	146	35	—	229
,, not in bearing	90	16	—	—	106
Coffee	30	41	—	—	71
Cardamoms	—	15	5	—	20
Forest	45	41	—	72	158
Grass, Fuel trees, P'na, &c	71	132	84	254	541
Total ..	601	766	341	613	2,321

The Directors regret to have to record the loss the Company has sustained in the death of their late colleague Mr. A Orchard. whose lengthened experience of planting in the Island made his advice of much value. Mr. J M Mason has been asked to take his place on the Board.

Mr. Gordon Pyper retires by rotation from the Directorship, and is eligible for re-election.

The appointment of an Auditor for the following year rests with the Meeting.

COLOMBO COMMERCIAL CO., LTD.

ANNUAL REPORT

To be presented to the seventh ordinary general meeting of the Company, on Monday, the 17th March, 1902, at 12 noon :—

The Directors have pleasure in placing before Shareholders—

Profit and Loss Account for the year ended 30th September, 1901.

Balance sheet made up to 30th September, 1901.

The above accounts shew the following figures :—

	£	s.	d.
Profit for the year after debiting all charges, interest on debentures, &c.,	8,548	3	8
Add balance brought forward from last year	2,166	11	9
	10,714	15	5
Less transferred Reserve Fund	2,000	0	0
Am available for dividend &c.,	8,714	15	5

Interim Dividends of 3 per cent. on the Preference Capital and 2½ per cent. on the Ordinary capital were paid on the 17th September, 1901, and the Directors recommend that the following dividends be now declared, viz.:—3 per cent. on the Preference Capital, making 6 per cent. for the year, and 5½ per cent. on the Ordinary Capital, making 8 per cent. for the year, the latter free of income tax.

After payment of the above dividends there will remain a balance of £2,023 13s 5d, which the Directors propose should be carried forward to next year.

The liquid assets in Ceylon appear in the Company's accounts at the same exchange as in last year's balance-sheet, viz.:—1s 1d per rupee.

The general reserve fund stands at £5,500, including the amount transferred in the present accounts.

Mr. L Famin, a member of the board, retires from office on this occasion, and being eligible, offers himself for re-election.

Messrs. Deloitte, Dever, Griffiths & Co., the Auditors, also offer themselves for re-election.—Local "Times."

THE CONSOLIDATED TEA AND LANDS COMPANY.

More trouble seems to be brewing for Sir John Muir and his friends, this time in connection with the Consolidated Tea and Lands Company. That Company was floated in 1896, with a beautiful "front page" on which figured the name of, amongst others, Field Marsha Earl Roberts, v.c., k.g., or as he was then Field Marshal Lord Roberts, v.c., and the shares went up to a premium. The career of the Company has been one of almost unbroken misfortune, its record of dividends paid on the ordinary shares being 4s. in 1897, 4s 4½d in 1898, 6s. in 1899, 5s 8d. in 1900, and *nil* in 1901. Last year the ordinary shares, £6 paid, were quoted at 2 11-16ths as the highest, but towards the end of the year they fell to 2s 6d, while the first and second preferences fell from 8½ and 6 to 4⅝ and 4 3-16ths respectively. Why the Company should have gone from bad to worse in this manner is a question which requires answering, and, apparently, the proprietors are now waking up to that fact. Enlightened, no doubt, by the revelations brought out at the inquiry into the affairs of the East India and Ceylon Tea Company regarding the excessive charges and commissions of Messrs. P R Buchanan & Co., and Messrs Finlay, Muir & Co., in both of which firms Sir John is interested, the Consolidated victims are now bestirring themselves. A meeting of some of the larger shareholders was called in Glasgow, on February 14th, by Messrs. Bannatyne & Guthrie, C. A., "to consider what action should be taken to protect the interest of the shareholders of the Company," with what result we do not yet know. It is doubtful if it is now too late to save the undertaking, but if prompt action is taken, something may be rescued from the wreck, and in time a sound healthy business built up on the ruins, but a decision should be come to and acted upon promptly.—*Investors' Review*, March 1st.

Grafting Cacao.—A successful attempt has been made to graft the ordinary Cacao on stocks afforded by the stronger growing *Theobroma bicolor*. *T. bicolor* grows readily in Trinidad, where it now appears to be well acclimatized. It was introduced in 1893, and we have now several trees giving regular crops. It remains to be seen what may be the value of this experiment, but as T bicolor is a much stronger grower than T Cacao, it is of course possible that some advantage to the cultivator may be expected. The method used was that of 'grafting by approach.'—*Trinidad Botanical Department Bulletin.*

CHRISTMAS ISLAND PHOSPHATES AND PROSPECTS.

Mr L H Clayton, District Officer, Christmas Island, in his report for the past year writes:—

The deposits of phosphate on the Island appear to be enormous and were supposed at one time to have been caused by the secretions of birds. A later theory is, however, that they are the result of the action of rain on certain deposits of ooze originally formed at the bottom of the sea and subsequently thrown up by a sub-marine eruption. Owing to the great depth of water and the suddenness with which the sea sometimes gets up, the anchorage cannot be described as safe. Calm weather may, however, be reasonably expected, although not relied upon, from May to November. With a view to inducing steamers to come close to the cliff and so facilitate loading, two temporary piers are now in course of erection. They are intended to act as a buffer between the rocks and any ship whose moorings give away. It is not certain that they will answer the purpose, and as they are constructed of Norwegian pine steeped in creosote it is doubtful if they will last for more than a few years. New plant for the obtaining and loading of phosphate is now being erected and the out-put is likely to be considerably increased, although perhaps not to the extent anticipated by the Company. The returns for 1902 will probably, however, not be affected as the work of construction is proceeding very slowly. As ships have sometimes had to stay at the Island for over a month at a time, it appears desirable to call attention to the fact that no supplies of any kind can be obtained locally. Not much is known as yet of the parts of the Island distant from the settlement and the complete absence of water from the higher levels renders exploration difficult.—*Penang Gazette*, March 10.

PLANTING NOTES.

Indian Tea Cess.—The full text of the memorial praying for a tea cess presented by Indian Tea Proprietors to the Viceroy appears on page 694.

Yataderia Tea Company: 20 per cent.—The shareholders in this Company are much to be envied (see page 689). The handsome dividend of 20 per cent was declared and we congratulate Mr. J R Fairweather, the superintendent, and all concerned in the excellent management which has brought about this happy result.

The Nahavilla Estates Company.—At the annual meeting which was held on 22nd March; the shareholders very generously did not claim the dividend of 2½ per cent (absorbing R9,912·50) which the directors recommended, and it was agreed that the balance should be carried forward to the extension account, for the purpose—we presume—of installing water-power for the factories on Ury and Nahavilla. This, we think, will be an effective and economical undertaking.

SHARE LIST.

ISSUED BY THE

COLOMBO SHARE BROKERS' ASSOCIATION.

CEYLON PRODUCE COMPANIES.

Company	paid p. sh.	Buyers.	Sellers.	Transaction.
Agra Ouvah Estates Co., Ltd.	500	800	850	825
Ceylon Tea and Coconut Estates	500	..	—	—
Castlereagh Tea Co., Ltd.	100	—	95	—
Ceylon Provincial Estates Co. Ltd.	500	—	500	500
Claremont Estates Co., Ltd.	100	—	—	—
Clunes Tea Co., Ltd.	100	—	50	40
Clyde Estates Co., Ltd.	100	—	—	—
Doomoo Tea Co., of Ceylon Ltd.	100	—	70	67½
Drayton Estate Co., Ltd.	100	—	..	—
Eila Tea Co., of Ceylon, Ltd.	100	25	30	—
Estates Co of Uva, Ltd.	500	—	205	190
Gangawatte Tea Co., Ltd.	100	—	—	—
Glasgow Estate Co., Ltd.	500	—	925	..
Great Western Tea Co., Ltd.	500	610	—	—
Hapugahalande Tea Estate Co.	200	—	—	—
High Forests Estates Co., Ltd	500	450	500	450
Do part paid	400	—	...	—
Horrekelly Estates Co Ltd	100	—	80	—
Kalutara Co., Ltd.,	500	—	250	—
Kandyan Hills Co., Ltd.	100	—	45	—
Kanapediwatte Ltd.	100	—	—	50
Kelani Tea Garden Co., Ltd.	100	..	35	—
Kirklees Estate Co., Ltd.	100	...	50	45
Knavesmire Estates Co., Ltd.	100	—	50	—
Maha Uva Estates Co., Ltd.	500	—	350	...
Mocha Tea Co., of Ceylon, Ltd.	500	—	709	675
Nahavilla Estate Co., Ltd.	500	..	300	—
Neboda Tea Co., Ltd.	500	—	500	—
Palmerston Tea Co., Ltd.	500	...	400	—
Penrhos Estates Co, Ltd.	100	—	87½	—
Pitakanda Tea Company	500	—	...	—
Pine Hill Estate Co., Ltd.	60	...	40	—
Putupaula Tea Co., Ltd.	100	...	..	—
Ratwatte Cocoa Co., Ltd	500	.	—	—
Rayigam Tea Co., Ltd.	100	...	..	—
Roeberry Tea Co., Ltd.	100	70	...	—
Ruanwella Tea Co., Ltd	100	..	40	35
St. Helier's Tea Co., Ltd,	500	...	—	—
Talgaswela Tea Co., Ltd.	100	...	20	—
Do 7 per cent Prefs.	100	..	—	—
Tonacombe Estate Co., Ltd,	500	..	325	—
Udugama Tea & Timber Co., Ltd.	50	...	...	—
Union Estate Co., Ltd.	500	..	110	—
Upper Maskeliya Estates Co., Ltd.	500	..	—	—
Uvakellie Tea Co., of Ceylon, Ltd,	100	60xDIV	—	—
Vogan Tea Co., Ltd.,	100	—	47½	45
Wanarajah Tea Co., Ltd.	500	..	—	—
Yataderiya Tea Co., Ltd.	100	—	285	—

Ceylon Commercial Companies.

Company	paid p. sh.	Buyers.	Sellers.	Transaction.
Adam's Peak Hotel Co., Ltd.	100	...	30	—
Bristol Hotel Co., Ltd.	100	—	100	—
Do 7 per cent Debts	100	107	—	107
Ceylon Gen. Steam Navigation Co., Ltd	100	205	220	205
Ceylon Ice & Cold Storage Co. Ltd.	100	—	115	110
Ceylon Superaeration Ltd.	100	—	45	—
Colombo Apothecaries' Co. Ltd.	100	—	145	—
Colombo Assembly Rooms Co., Ltd.	20	15	..	
Do prefs.	20	...	..	—
Colombo Fort Land and Building Co., Ltd.	100	—	85	—
Colombo Hotels Company	100	—	280	280
Galle Face Hotel Co., Ltd.	100	...	200	—
Kandy Hotels Co., Ltd.	100	120	...	—
Kaluganga Nav. Co. Ltd.	60	...	—	—
Mount Lavinia Hotel Co., Ltd.	500	—	300	—
New Colombo Ice Co., Ltd.	100	..	150	—
Nuwara Eliya Hotels Co., Ltd.	30	—	—	—
Do 7 per cent prefs.	100	—	110	—
Public Hall Co., Ltd.	20	12½	14	—

LONDON COMPANIES

Company	paid. p. sh.	Buyers.	Sellers.	Transaction
Alliance Tea Co., of Ceylon, Ltd.	10	...	8—9	—
Anglo-Ceylon General Estates Co	100	...	55—60	—
Associated Estates Co., of Ceylon	10	..	1½—2½	—
Do. 6 per cent prefs.	10	..	3—5	—
Ceylon Proprietary Co.	1	.	¼—½	—
Ceylon Tea Plantation Co., Ltd.	10	..	23¼—24	—
Dimbula Valley Co., Ltd.	5	..	5—5½	—
Do prefs	5	—	5—6	—
Eastern Produce & Estates Co. Ltd.	5	...	3¼—3¾	—
Bdelapolla Tea Co., Ltd	10	...	6—8	—
Imperial Tea Estates Co., Ltd.	10	...	4—4½	3½
Kelani Valley Tea Assn., Ltd.	5	...	3—5	—
Kintyre Estates Co., Ltd.	10	...	6—8	—
Lanka Plantations Co., Ltd	10	..	4	—
Nahalma Estates Co., Ltd.	1	...	nom	..
New Dimbula Co., Ltd.	1	...	2¾—3	..
Nuwara Eliya Tea Estate Co., Ld.	10	—	9⅞	9¾
Ouvah Coffee Co., Ltd.	10	..	6—7	—
Ragalla Tea Estates Co., Ltd.	10	.	11—13	—
Scottish Ceylon Tea Co., Ltd.	10	.	10—15	—
Spring Valley Tea Co., Ltd.	10	...	2—5	—
Standard Tea Co., Ltd.	6	..	10—12	..
The Shell Transport and Trading Company, Ltd.	1	...	2⅞—3⅛	..
Ukuwella Estates Co., Ltd.	25	—	par	—
Yatiyantota Ceylon Tea Co., Ltd.	10	—	5¼	..
Do. pref. 6 o/o	10	...	9—10	...

BY ORDER OF THE COMMITTEE.

Colombo, April 4th, 1902.

* Latest London Prices.

RAINFALL RETURN FOR COLOMBO.

(*Supplied by the Surveyor-General.*)

	1897.	1898.	1899.	1900	Av of 32yrs.	1901	1902
	Inch	Inch	Inch.	Inch.	Inch.	Inch.	Inch
January ..	3·81	2·32	6·98	3·72	3·24	11·91	1·95
February ..	1·68	1·98	2·78	0·63	1·89	3·55	4·57
March ..	3·66	4·21	0·88	3·71	4·75	5·12	6·85
April ..	10·97	22·81	6·66	15·12	11·43	8·71	0·04*
May ..	8·30	5·80	17·73	10·63	12·04	6·28	
June ..	10·14	10·94	9·23	7·83	8·35	5·93	
July ..	5·24	6·15	1·11	6·77	4·30	4·52	
August ..	9·09	0·97	0·62	7·35	3·79	0·46	
September ..	4·58	6·90	1·48	4·00	4·93	3·93	
October ...	4·71	20·60	12·99	9·47	14·36	3·91	
November ..	11·66	17·38	8·58	9·25	12·55	19·84	
December ..	8·89	3·05	4·44	5·20	6·35	1·70*	
Total..	82·73	103·11	73·48	83·68	88·03	75·86	13·41*

* From 1st to 2nd April. 0 04 inch, that is up to 9-30 a.m on the 3rd April —Ed. C.O.

CEYLON TEA: MONTHLY SHIPMENTS TO UNITED KINGDOM AND ESTIMATE.

Estimate for March 1902—8 to 8½ mil. lb.
Total Shipments Do 1902—8,500,000
Do Do Do 1901—7,932,000
Do Do Do 1900—10,578,085
[Estimate for April 1902—9 to 9½ million lb.]

The Deaf Hear.—No. 479 of *the Illustrated World* of 626, Chiswick High Road, London, W., England contains a desciption of a remarkable Cure for Deafness and Head Noises which may be carried out at the patient's home, and which is said to be a certain cure, This number will be sent free to any deaf persons sending rheir address to the Editor.

COLOMBO PRICE CURRENT.

(Furnished by the Chamber of Commerce.)

EXPORTS

Colombo, April 1st, 1902.

Cardamoms :—
All round parcel, well bleached per lb. R1·20
Do. dull medium do. R1·10
Special assortment, 0 and 1 only do. R1·50
Seeds do. R1·10

Cinchona Bark :—
Per unit of Sulphate of Quinine 9c—1½ at 3 o/o

Cinnamon :—
Ordinary assortment per lb. 53c.
Nos. 1 and 2 only per lb. 59c.
Nos. 3 and 4 only per lb. 48c.

Cinnamon Chips :—
Per candy of 560 lb R67·50

Cocoa :—
Finest estate red; unpicked per cwt R40·00
Medium do do do R35·00
Bright native unpicked and undried R32·50
Ordinary do do do R25·00

Coconuts—(husked).
Selected per thousand R60·00
Ordinary " R53·00
Smalls " R44·00

Coconut Cake—
Poonac in robins f. o. b. per ton R80·00
Do in bags None

Coconut (Desiccated).
Assorted all grades per lb 22c

Coconut Oil—
Dealers' Oil per cwt R17·50. Business at the lower figure.
Coconut Oil in ordinary packages f. o. b. per ton R385·00. Business at the lower figure.

Coffee.—
Plantation Estate Parchment on the spot per bus. R11·50
Plantation Estate Coffee f. o. b. (ready) per cwt.—None.
Native Coffee, f.o.b per cwt.—None.

Citronella Oil—
Ready do per lb.—46c

Copra—
Boat Copra per candy of 560 lb. R56·00
Calpentyn Copra do do R56·00
Cart do do do R51·00
Estate do do do R56·00

Croton Seed per cwt—R11·00

Ebony—
Sound per ton at Govt. depot—R190·00.
Inferior R125·00.—Next Sales 7th April

Fibres—
Coconut Bristle No 1 per cwt None
Do " 2 None
Do mattress " 1 None
Do " 2 None
Coir Yarn, Kogalla " 1 to 8 14·00 } Steady
Do Colombo " 1 to 8 10·50 } Steady
Kitool all sizes None
Palmyrah None

Pepper—Black per lb None

Plumbago—
Large lumps per ton R650)
Ordinary lumps do R600 |
Chips do R400 }
Dust do R275 |
Do (Flying) do R150)

Sapanwood— per ton R40·00

Satinwood (ordinary) per cubic ft. R4·00
Do (Flowered) per cubic ft. R17·00

Tea—	High Grown Average. cts	Medium Average. cts	Low Grown Average. cts
Broken Pekoe and Broken Orange Pekoe per lb	60	44	38
Orange Pekoe do	50	39	36
Pekoe do	46	36	33
Pekoe Souchong do	41	33	29
Pekoe Fannings do	32	30	28
Broken mixed—dust, &c	27	24	24

CEYLON EXPORTS AND DISTRIBUTION FOR SEASONS 1901 AND 1902.

COUNTRIES	Black Tea. 1902 lbs.	Black Tea. 1901 lbs.	Green Tea. 1902 lbs.	Green Tea. 1901 lbs.	Coffee—cwts. Plantation	Coffee—cwts. N'tive	Coffee—cwts. Total.	Cocoa cwts.	C'moms lbs.	Cinnamon Bales. lbs.	Cinnamon Chips. lbs.	Coconut Oil. 1902 cwt	Coconut Oil. 1901 cwts	Copra cwts.	Desiccated Coconut lb.	Poonac. cwts.	Coconuts. No.	Plumbago. 1902 cwts	Plumbago. 1901 cwts.
U K. ..	26460731	26855772	93130	..	1206	..	1206	11087	103408	77654	43205	26365	31467	3629	1291646	..	1744080	41349	25520
" Austria ..	175	16925	..	..	1	..	1	...	...	..	11200	1701	772	...	12000	...	5000	...	..
" Belgium ...	8137	5005	...	..	...	..	...	250	...	31800	30800	...	1497	3470	59570	9088	49780	2296	3157
" France ..	68969	91879	...	..	...	...	...	.	..	22300	5600	...	..	6166	...	...	34020	..	...
" Germany ..	106502	71915	...	..	...	..	...	889	26177	103800	82954	1332	..	1027	19148	8342	153925	8601	10671
" Holland ..	750	11074	...	..	...	..	..	..	..	2500	39200	..	...	..	22750	..	..	...	...
" Italy ..	3200	2505		..	..	..	..	32	435	32400	47992	807	..	..	...	10	3760	..	...
" Russia ..	2400478	1969493	24210	..	2	...	2	...	72	130	..	...	..	12036	..	..	...	..	599
" Spain ..	500		..	...	...	..	..	..	..	34400	11200	..	..	...	..	..	...	...	...
" Sweden ..	13755	17797	...	..	..	..	..	100	...	..	..	...	199	...	..	..	..	...	...
" Turkey ..	9073	13266	..	-	...	...	..	..	..	..	...	..	...	..	...	...	..	..	...
" India ..	174987	475067	515	3240	15	...	15	..	29920	...	2240	13935	20510	...	...	...	14400	1582	158
" Australia ..	2667995	3975357	..	...	693	...	693	154	...	2300	3920	...	94	...	113740	...	..	25	132
" America ..	698482	665406	184366	12010	31	..	31	..	...	45000	4315	8041	7007	...	191475	...	...	55216	41213
" Africa ..	111629	65581	..	..	2	..	2	...	1776	..	..	...	33	..	9050	1	223700	..	...
" China ..	646 66	445098	...	...	8	...	8	100	5101	200	112	..	707	..	...	..	—	637	..
" Singapore ..	27996	35 76	...	...	1	..	1	3029	300	...	..	...	...	...	..	...	...	...	...
" Mauritius ..	19900	8390	..	...	...	..	...	..	..	..	..	...	..	...	..	...	..	..	..
" Malta ..	94000	85130	..	...	...	...	..	...	..	...	..	...	..	..	...	..	..	...	..
Total export from 1st Jan to 1st April. 1902	27513625	34816936	307221	15850	1959	..	1959	15641	167489	352484	282828	52182	62236	35328	1892659	17441	2228665	109706	81450

MARKET RATES FOR OLD AND NEW PRODUCTS.

(From Lewis & Peat's Fortnightly Price Current, London, February 26th, 1902.)

	QUALITY.	QUOTATIONS
ALOES, Soccotrine cwt.	Fair to fine dry ..	70s a 80s
Zanzibar & Hepatic ,,	Common to good ..	20s a 60s
ARROWROOT (Natal) lb.	Fair to fine ..	5½d a 6¾d
BEES' WAX, cwt.		
Zanzibar & Bombay White ,,	Good to fine	£6 a £7 10s
Zanzibar & Bombay Yellow ,,	Fair ,,	£6 a £6 12s 6d
Madagascar ,,	Dark to good palish	£6 10s a £7
CAMPHOR, Formosa ,,	Crude and semi-refined	165s a 185s
Japan ,,	Fair average quality .	175s a 180s
CARDAMOMS, Malabar lb	Clipped, bold, bright, fine	1s 9d a 2s
	Middling, stalky & lean	11d a 1s 7d
Ceylon. - Mysore ,,	Fair to fine plump ..	1s 2d a 3s
	Seeds ..	1s 6d a 1s 9d
,, Tellicherry ,,	Good to fine ..	1s 6d a 2s
	Brownish ..	1s 3d a 1s 6d
,, Long ,,	Shelly to good ..	1s 1d a 2s 2d
,, Mangalore ,,	Med brown to good bold	2s 3d a 3s 3d
CASTOR OIL, Calcutta ,,	1sts and 2nds ..	3¼d a 3½d
CHILLIES, Zanzibar cwt.	Dull to fine bright ...	3-s 6d a 40s
CINCHONA BARK.—lb.	Ledgeriana Orig. Stem	3d a 5½d
Ceylon	Crown, Renewed	5d a 7d
	Org. Stem	3¾d a 5½d
	Red Org. Stem	3⅜d a 4¼d
	Renewed	3d a 5¾d
	Root	3¾d a 4d
CINNAMON, Ceylon 1sts per lb	Ordinary to fine quill	8½d a 1s 6d
2nds	,, ,,	8d a 1s 6d
3rds	,, ,,	7½d a 1s 4d
4ths	,, ,,	7d a 11d
Chips	,, ,,	2½d a 10d
CLOVES, Penang lb.	Dull to fine bright bold	4½d a 9½d
Amboyna ..	Dull to fine	5d a 6d
Zanzibar and Pemba	Good and fine bright	3 15-16d a 4¼d
	Common dull to fair	3⅜d a 3⅞d
Stems ..	Fair	1⅝d
COFFEE		
Ceylon Plantation ,,	Bold to fine bold colory	92s 6d a 122s
	Middling to fine mid .	80s a 10?s
	Low mid. and low grown	
	Smalls	40s a 60s
Native	Good ordinary	40s a 55s
Liberian ,,	Small to bold	30s a 40s
COCOA, Ceylon ,,	Bold to fine bold	62s a 80s
	Medium and fair	53s a 60s
	Native	52s a 60s 6d
COLOMBO ROOT ,,	Middling to good	7s a 14s
COIR ROPE, Ceylon ton		nominal
Cochin ,,	Ordinary to fair .	£13 10s a £18
FIBRE, Brush ,	Ord. to fine long straight	£16 a £19
Cochin ,,	Ordinary to good clean	£20 a £24
Stuffing ,,	Common to fine	£7 a £9
COIR YARN, Ceylon ,,	Common to superior	£15 a £30
Cochin ,,	,, ,, very fine	£12 a £32
do. ,,	Roping, fair to good	£10 a £14 10s
CROTON SEEDS, sift. cwt.	Dull to fair	15s a 20s
CUTCH ,, ,,	Fair to fine dry	23s a 35s
GINGER, Bengal, rough ,,	Fair	40s
Calicut, Cut A ,,	Good to fine bold	80s a 90s
B & C ,,	Small and medium	48s a 70s
Cochin Rough ,,	Common to fine bold	32s 6d a 50s
	Small and D's	37s a 40s
Japan ,,	Unsplit	40s a 42s
GUM AMMONIACUM ,,	Sm. blocky to fine clean	15s a 40s
ANIMI, Zanzibar ,,	Picked fine pale in sorts	£10 7s 6d a £18
	Part yellow and mixed	£? a £9
	Bean and Pea size ditto	70s a £9 2s 6d
	Amber and dk. red bold	£5 10s a £6 7s 6d
	Med. & bold glassy sorts	80s a 1?0s
Madagascar ,,	Fair to good palish ..	£4 a £8
	,, ,, red ...	£4 5s a £7 10s
ARABIC E. I. & Aden ,,	Ordinary to good pale	25s a 45s
Turkey sorts ,,		32s a 36s
Ghatti ,,	Pickings to fine pale ...	10s a 22s 6d
Kurrachee ,,	Good and fine pale ...	37s 6d a 42s 6d
	Reddish to pale selected	30s a 35s
Madras ,,	Dark to fine pale ...	20s a 25s
ASSAFŒTIDA ,,	Clean fr to gd. almonds	45s a 80s
	Ord. stony and blocky	9s a 20s
KINO ,,	Fine bright	1s 3d
MYRRH, picked ,,	Fair to fine pale	80s a 115s
Aden sorts ,,	Middling to good	50s a 70s
OLIBANUM, drop ,,	Good to fine white	45s a 55s
	Middling to fair	30s a 42s 6d
pickings ,,	Low to good pale	18s a 27s 6d
siftings ,,	Slightly foul to fine	18s a 22s
INDIARUBBER, Assam lb	Good to fine	2s a 2s 3d
	Common to foul & mxd.	7d a 1s 6d
Rangoon	Fair to good clean ...	2s a 2s 4d
Borneo	Common to fine	1s a 2s

	QUALITY.	QUOTATION.
INDIARUBBER d.)		
Java, Sing. & Pe b.	Foul to good clean ...	8d a 2s 3d
	Good to fine Ball ...	2s 6d a 3s
	Ordinary to fair Ball ...	1s 10d a 2s 4d
Mozambique ,,	Low sandy Ball ...	1s 3d a 1s 6d
	Sausage, fair to good ..	2s a 2s 9d
	Liver and Livery Ball ..	1s 9d a 2s 6d
Nyassaland	Fair to fine ball ..	?s 3d a 2s 8d
	Fr to fine pinky & white	2s a 2s 5½d
Madagascar	Fair to good black ..	1s ?d a 1s 9d
	Niggers, low to fine ..	7d a 2s
INDIGO, E.I.	Bengal—	
	Shipping mid to gd violet	3s 4d a 4s
	Consuming mid. to gd.	3s a 3s 3d
	Ordinary to mid.	2s 10d a 3s
	Mid. to good Kurpah	1s 6d a 2s 1d
	Low to ordinary	1s a 1s 5d
	Mid. to good Madra	1s 10d a 2s 3d
MACE, Bombay & Penang per lb.	Pale reddish to fine	2s a 3s
	Ordinary to fair	1s 4d a 1s 11d
	Pickings	1s 3d a 1s 4d
MYRABOLANS, Madras cwt	Dark to fine pale UG	5s a 6s
	Fair Coast	4s 6d a 5s
Bombay ,,	Jubblepore	5s a 5s 6d
	Bhimlies	4s 6d a 7s
	Rhajpore, &c.	4s a 5s 6d
Bengal ,,	Calcutta	3s 6d a 5s
NUTMEGS— lb.	64's to 57's	2s 6d
Bombay & Penang ,,	110's to 65's	1s 1d a 2s 5½d
	160's to 130's	6d a 1s
NUTS, ARECA cwt.	Ordinary to fair fresh	?7s a 35s
NUX VOMICA, Bombay per cwt.	Ordinary to middling	4s a 5s 6d
Madras	Fair to good bold fresh	7s a 10s 6d
	Small ordinary and fair	5s a 6s 9d
OIL OF ANISEED ,,	Fair merchantable	4s 4d a 4s 6d
CASSIA ,,	According to analysis	2s 7d a 3s
LEMONGRASS ,,	Good flavour & colour	7?d
NUTMEG ,,	Dingy to white	1¼d a 3d
CINNAMON ,,	Ordinary to fair sweet	3¾d a 1s 6d
CITRONELLE ,,	Bright & good flavour	9½d a 10d
ORCHELLA WEED—cwt		
Ceylon ,,	Mid. to fine not woody .	10s a 12s 6d
Zanzibar. ,,	Picked clean flat leaf ..	10s a 14s
	,, wiry Mozambique	10s a 11s
PEPPER (Black) lb.		
Alleppee & Tellicherry	Fair to bold heavy ...	5¾ a 6d
Singapore	Fair	5 15-16d
Acheen & W. C. Penang	Dull to fine	5½d a 6¼d
PLUMBAGO, lump cwt.	Fair to fine bright bold	30s a 35s
	Middling to good small	2?s a 28s
chips	Dull to fine bright ..	9s a 15s
dust	Ordinary to fine bright	4s 6d a 8s 3d
SAFFLOWER	Good to fine pinky ..	65s a 75s
	Inferior to fair ..	40s a 60s
SANDAL WOOD—		
Bombay, Logs ton.	Fair to fine flavour ..	£15 a £40
Chips ,,	... ...	5s a £8
Madras, Logs ,,	Fair to good flavour ..	£15 a £40
Chips ,,	Inferior to fine ...	£4 a £8
SAPANWOOD Ceylon ,,	Fair to good ..	£5 a £5 10s
Manila ,,	Rough & rooty to good	£4 10s a £5 15s
Siam ,,	bold smooth	£7
SEEDLAC cwt.	Ord. dusty to gd. soluble	105s a 110s
SENNA, Tinnevelly lb	Good to fine bold green	5d a 6½d
	Fair greenish	3½d a 4d
	Common dark and small	½d a 3d
SHELLS, M. o'PEARL— Bombay cwt.	Bold and A's	£1 a £5 10s
	D's and B's	
	Small ...	
Mergui ,,	Small to bold ..	£6 7s 6d a £6 15s
Mussel ,,	Small to bold ...	22s a 55s
TAMARINDS, Calcutta... per cwt.	Mid. to fine bl'k not stony	8s a 10s
Madras	Stony and inferior ..	4s 6d a 6s
TORTOISESHELL—		
Zanzibar & Bombay lb.	Small to bold dark mottle part heavy	16s a 22s 6d
TURMERIC, Bengal cwt.	Fair ...	16s a 16s 6d
Madras ,,	Finger fair to fine bold bright	17s a 23s
Do. ,,	Bulbs ..	13s a 17s
Cochin ,,	Finger ...	17s 6d a 18s
	Bulbs ...	12s 6d
VANILLOES— lb.		
Mauritius ... 1sts	Gd. crystallized 3½ a 9 in	5s 9d a 23s
Bourbon ... 2nds	Foxy & reddish 3½ a 8 ,,	6s a 14s
Seychelles 3rds	Lean and inferior ...	1s 9d a 7s 9d
VERMILION lb.	Fine, pure, bright ...	3s 2d a 3s 3d
WAX, Japan, squares cwt	Good white hard ...	33s a 35s

THE

AGRICULTURAL MAGAZINE,

COLOMBO.

Added as a Supplement Monthly to the "TROPICAL AGRICULTURIST."

The following pages include the Contents of the *Agricultural Magazine* for April :—

Vol. XIII.] APRIL, 1902. [No. 10.

TOWN AND VILLAGE SHOWS.

AGRICULTURAL Shows as held at Colombo, Kandy and Galle are undoubtedly very imposing spectacles. The attendance at such Shows is generally very large, the exhibits very numerous, and the attractions very great. But can it conscientiously be said that they attain the object they are intended to serve? We think not. In saying so we do not intend to assert that they are altogether barren of good results, for some benefit is bound to accrue to visitors who are given the opportunity of seeing collections of the best of the island's produce, and what the possibilities are of careful and methodical treatment of plants and animals.

But to serve its purpose a Show should be the *rendezvous* not merely of people of fashion—who come to admire, to criticise and to be amused, certainly not to learn—but also for *bona fide* cultivators of the soil, the real tillers of the land, whom we are trying to bring within the educative influence of Agricultural Shows. It is these people we want to see well to the fore at Agricultural Shows, comparing notes with one another, asking and giving information as to the best way of cultivating a particular plant, enquiring where the best seeds are obtainable, what the best seasons are for growing them, the best manures for fertilizing, and in fact the best way of treating a crop generally. We want the opportunity to be also taken for the exchange of good seed, a most important factor in improving cultivation.

We have had some experience of large Town Shows, and we regret to state that such experience has not led us to form a very high opinion of their utility or influence for good. In towns the men of influence and money generally succeed in ousting the real producer. The prizes being good and the opportunity to attract notice favourable, such men neglect nothing to bring themselves into prominence. Frequently they appropriate the produce of the villagers and pass it off as their own, while they even go the length of purchasing in the open market the best specimens that money can buy, and exhibiting them as the fruits of their own skilled labour. The feelings of exhibitors to one another at such big Shows are, so far from being those of friendly competitors, rather of uncompromising rivals, jealous and impatient of one another's success.

The dissemination of seeds and plants of good varieties of plants is by some people considered to be detrimental to their interests, and successful methods of cultivation are to them "diplomatic secrets" not to be revealed. The anxiety to win awards is so great that normal standards of rectitude are ignored and unscrupulous means employed. We have had a competitor, in his chagrin at failure to secure a coveted medal, come to us with the absurd request that he may be permitted to *purchase* a spare medal or two. How under such circumstances, could conscientious promoters of

Agricultural Shows hope to effect any good to the real producer? Every successful competitor, whose exhibits are the fruits of his own labour, may be pardoned a little pride in his success, but the boastful arrogant spirit of the exhibitor of another's produce is beyond all toleration.

Some dozen years ago we were present at a Village Show held in the hamlet of Dalugama near Kelani, under the patronage of the late Mr. George Wall, and with the energetic Mr. Charles Stouter as Secretary, and were much impressed with—what we would call for the want of a better word—the "genuineness" of the proceedings. There we saw the produce of the cultivator shewn in his own name, and awards going in the right direction. The "Middleman" was out of the way, and why? Well it was too small a business for him, and this decision on his part is the secret of the success of Village Shows—"a good riddance" we say "of a most undesirable element." But unfortunately since the Dalugama Show we have not heard of another Village Show—at least in the Western Province—and "more's the pity" till Saturday, the 22nd March, when a succesful little exhibition of garden produce was held at the Danowita school situated in the Hapitigam Korale, some six miles from Ambepussa Railway Station. The exhibits were the produce of the school gardens in the neigbbourhood (Danowita, Dorawaka, Murugampola, &c.) as well as of the gardens of the village children in their own homesteads, and for this reason the Show, though small, was of an interesting character.

Advantage was taken of the presence of a large gathering of villagers for distributing a quantity of different kinds of seeds brought by the Superintendent of School Gardens from the Colombo Stock Garden. The acting Director of Public Instruction, under whose patronage the Show was held, was himself present and evinced the greatest interest in the proceedings. After the distribution of awards, consisting of articles likely to be useful to the exhibitors (who were all young children) the acting Director spoke to a large audience on the importance of village children being given an early training in agriculture, by means of school gardens, and the advantages that must follow close applications to the cultivation of land and persistent efforts to grow better and larger crops. Mr. Drieberg, Superintendent of School Gardens, spoke in a similar strain and called upon the older generation to contribute all the help they can in pushing on the new scheme for the agricultural training of village youths, and to encourage their children to give their spare time to the healthy and profitable exercise of gardening. Mr. Jayatilleke, Principal of the Colombo Buddhist College, exhorted the people to take advantage of the opportunities offered to them to improve their status as agriculturists and horticulturists. Hearty votes of thanks were accorded to the speakers, to the Mudaliyar of the Korale, Mr. Louis Dassanaika, and to Mr. Alexander Perera, Manager of the Colombo Stock Garden, all of whom had contributed their share of help to make the Show a success.

It was quite apparent that the proceedings, taken as a whole, appealed strongly to the sense and feelings of the large assembly, and that the object of the Show as an influence for good was in a great measure attained.

We trust that the success of the little Show at Danowita will lead to similar Shows being held at different centres in other parts of the Island, with a view to awakening the energies—more or less dormant—and latent capabilities of our village population.

OCCASIONAL NOTES.

Mr. Fredrick Lewis's coming work on Ceylon Timber Trees should prove a valuable reference book to all foresters and others interested in woods. Mr. Lewis is well qualified for the task he has undertaken, having devoted his life, so to speak, to the subject of Forest Conservancy, while his knowledge of Forest Botany is acknowledged to be both comprehensive and sound. Up till now the literature on the subject of our timber trees has been very scanty, and Trimen's Flora contains only short notes on their distribution and value. Under the circumstances a work of the nature of that Mr. Lewis proposes in his introduction to give us will be a valuable acquisition.

We would draw attention to the interesting report on Cho-cho, referred to in our last issue, from the pen of Mr. W. Nock, Superintendent of Hakgalla Botanic Gardens, who has done much to introduce and naturalize exotics in Ceylon. The vegetable is one which deserves to be popularised through our Village School Gardens.

We reproduce a notice of Mr. Herbert Stone's paper (read before the Society of Arts, London) on the Identification of Woods. The subject is one which should prove of the greatest interest to foresters, and Mr. Stone is an acknowledged authority on all questions relating to Timbers. For these two reasons we have no doubt that the notice will prove acceptable to those of our readers who are concerned with forest work and timber-supply.

A consignment of plants of the best varieties of table bananas is shortly expected from Queensland for the Colombo Stock Garden, whence they will find their way to the village School Gardens that have been started in various parts of the Island.

We welcome the "Journal of the Department of Western Australia" as an exchange. It is a well got up monthly of handy size, and contains much useful reading matter.

Brucea Sumatrana is the name of a plant about which there has been of late much enquiry outside Ceylon, owing to the medicinal virtues of the seeds as a cure for dysentery. The plant, an introduced one, occurs as a common weed about Kandy. Trimen thus speaks of it: The whole

plant is bitter, and the seeds (called "Macassar kernels") are much used in Java as a cure for dysentery. Another native plant of the same order (*Simarubaceæ*) *Ailanthus excelsa*, known as Wal-bilin, or Kumbalu, contains a fragrant resin which is also used in dysentery.

The West Indian Department of Agriculture appears to be steadily developing under the able direction of Dr. Morris, once of Ceylon, now Commissioner for Agriculture in the West Indies. We learn from the last report of the Department, that seven Agricultural Scholarships have been founded with the object of encouraging the most promising boys in the smaller Islands to get a thorough knowledge of the science and practice of Agriculture. Schools of Agriculture exist in St. Vincent, Dominica and St. Lucia, where 70 boys are trained for 3 or 4 years free of all cost. Agricultural Shows are held regularly in seven of the Islands with a view to show the possible results of the better cultivation and preparation of produce. Already twelve pamphlets, comprising some 417 pages, have been issued and 30,000 copies distributed. Among others, the following subjects have been dealt with: The Cultivation of Vegetables, The General Treatment of Insect Pests, Hints on School Gardens, Bee-keeping in the West Indies, Manures and Leguminous Plants, Hints on the Cooking of Sweet Potatoes.

In our last issue we referred to a new remedy for foot and mouth disease. The following telegram from London, dated 9th March, brings further hopes of relief for the much-tried Stock-owner:—"It is officially announced in Berlin that a cheap and sure means has been discovered by which cattle may be given immunity from Rinderpest."

The *Family Doctor* thus explains why boiled or condensed milk is not so nourishing as unboiled milk: It is not in the albumen, fat or sugar, but in the albuminates of iron and phosphorus and perhaps also of fluorine that the vital changes take place. These albuminates are certainly in the milk and are present in a vitalised form as proteids. On boiling the change taking place is simply due to the coagulation of the globulin or proteid molecule which splits away from the inorganic molecule, and thus renders it as to the iron and fluorine unabsorbable, and as to the phosphorus molecule unassimillable. As a result, it is said, there is defective nutriment in boiled milk for the formation of bone and teeth, a most serious defect in the case of growing infants fed only on a milk diet.

Sodium arsenite, a cheap chemical, has been proved to be most effective in the eradication of prickly pear in New South Wales. The proportion used is 8 lbs. of the chemical to 80 gallons water; the plants being thoroughly sprayed over with the mixture. The same treatment is recommended for briars, lantana, thistles, and other weeds, as well as for eradicating couch grass from gravel paths, roads, &c.

RAINFALL TAKEN AT THE SCHOOL OF AGRICULTURE DURING THE MONTH OF MARCH, 1902

1	Saturday ...	Nil	17	Monday ..	·04
2	Sunday ...	Nil	18	Tuesday ...	2·04
3	Monday ...	Nil	19	Wednesday ...	Nil
4	Tuesday ...	Nil	20	Thursday ...	Nil
5	Wednesday ...	Nil	21	Friday ...	Nil
6	Thursday ...	Nil	22	Saturday ...	Nil
7	Friday ...	Nil	23	Sunday ...	Nil
8	Saturday ...	·04	24	Monday ...	·65
9	Sunday ...	·26	25	Tuesday ...	·10
10	Monday ...	·90	26	Wednesday...	Nil
11	Tuesday ...	Nil	27	Thursday ...	1·25
12	Wednesday ...	Nil	28	Friday ...	1·55
13	Thursday ...	Nil	29	Saturday ..	Nil
14	Friday ...	Nil	30	Sunday ...	Nil
15	Saturday ...	Nil	31	Monday ...	02
16	Sunday ...	·11	1	Tuesday ...	Nil
				Total...	6·96
				Mean...	·22

Greatest amount of rainfall registered in 24 hours of the 18th March, 1902, 2·04 inches.

Recorded by ALEX PERERA.

SECHIUM EDULE—"WHITE VARIETY."

The only existing plant of this variety in this country was accidentally destroyed at Peradeniya in the middle of last year. Application was at once made to Mr. Hart, Superintendent of the Botanic Gardens, Trinidad, for a few fruits. Our request was kindly and promptly attended to, and a small box containing six fruits reached us in February, 1895. Two of the fruits were in good condition, and after being started were finally planted out on the 7th of March. They are now healthy plants, growing vigorously and bearing a good crop of full size. The three largest fruits weighed as follows: No. 1, 27 oz., No. 2, 24½ oz., and No. 3, 24 oz. This compares very favourably with any I have seen in the West Indies. This variety will grow and crop in the lowcountry, whereas the green variety does not do much good below 2,000 feet elevation. It will therefore, I trust, prove a useful addition to the lowcountry vegetables. The plant is perennial and is of the easiest possible cultivation; given good soil, it will grow rapidly and will ramble over any trellis or tree or cover any rubbishy corner. It usually begins to bear in from three to four months after being planted. In my report for 1895 full details are given as to the best mode of planting it, and perhaps it would not be out of place to repeat them here:—"It thrives best in a rich, deep, well-drained soil, but may be made to grow anywhere by preparing the site for each plant in the following manner:—

Make a hole four or five feet in diameter, and eighteen inches to three feet deep, according to the subsoil. If the subsoil is good and free, you may go to the depth of three feet, but if it is clayey or likely to hold water, eighteen inches will be quite deep enough. Place a layer of rough stones at the bottom of the hole to a depth of six

to nine inches for drainage, and over this a few inches deep of small twigs or half-rotted leaves, to prevent the fine soil from getting between the stones and choking the drainage. The hole may be filled up with the following compost: One-third ordinary garden soil, one-third half-rotted cattle or stable manure (cattle manure preferred for hot, sandy soils, and stable manure for cold, clayey soils), and the remaining third may be formed of leaf-mould, sand, woodashes, lime, and the sweepings of the poultry-yard. When the hole has only been taken out eighteen inches deep, it will be necessary to raise the soil about eighteen inches above ground; indeed in every case, except in very dry districts, it is best to raise it. The whole fruit, which is sent out in a germinated state, must be planted about three inches deep in the centre of the hole. It begins to grow at once, and in a week or ten days it will have made a good start. It is a creeper, and each plant will require a space of about twenty feet square.

In the *Kew Bulletin* for May and June, 1896, there are some remarks about this plant, which though no doubt refers to the green variety which was sent to them from the Ceylon garden some years ago is quite applicable to the white one. It is there shown that the cho-cho has been taken up by the natives of India by whom it is regarded as *one of the most wholesome of foods.* "Cho-cho is now quite established as a popular vegetable in Bangalore and the adjacent villages. The fruit has also been widely distributed to other towns in the province. It is largely used in the central jail where the fruit is carefully grown and considered to be one of the most wholesome food for prisoners. It is not generally known, however, that the large fleshy root of the plant, sometimes weighing nearly twenty lbs., can be cooked and eaten like a yam." The cho-cho is also largely grown in England under glass to supply Covent Garden market. The large flat seeds if carefully cooked are regarded as a great delicacy. Starch is also prepared from the roots at Jamaica.

Here we have a plant eminently suited to the people of this country, a perennial requiring very little culture, whose roots, fruit and seeds give a plentiful supply of good wholesome food, and I trust it will be more largely cultivated in Ceylon in the future.

Of its lasting qualities I may mention that the original plant introduced into this garden from Jamaica in January, 1885, and from which I believe all the plants in the East—perhaps millions—are descended, is now in perfect health and bearing as regularly and heavily after twelve years* as it has ever done.

The fruit can be sent to table in a large variety of ways, from a very good pickle of the young fruits to an acknowledged delicacy from the seeds.

I am led to make the above remarks because of the absurd rumour which has been spread among the natives of this country, viz., that the plant contains poison, and also that a continual use of the fruit produces rheumatism. With regard to the latter I may say that thousands of families feed on this in Jamaica all through the season, and during my 7½ years' residence there I never heard of any one being in the slightest degree affected by them in any way, but beneficially. Myself and family have eaten them whenever we could get them for the last 23 years, * and we have always found them thoroughly wholesome.

As to their containing poison this is a great mistake, and I think the following may account for the spread of the rumour:—The late Dr. Trimen in his administration report for 1894 gives two paragraphs on the same page, one about "Nux Vomica" and one on the Cho-Cho, and he also adds two footnotes. The one referring to "Nux Vomica" states: "The pulp in which the seeds are immersed contains a small proportion of strychnine so small that it is said that this pulp is eaten by birds. Dr. Ondaatjie has, however, settled by experiment on dogs, cats, and pigeons that it is fatally poisonous in sufficient quantity." I think it possible that some one may have read this footnote as referring to the cho-cho and possibly told some coolie about it. I cannot account for it in any other way.

Considering the value of this plant for food, I may be permitted to respectfully suggest that as a means of encouraging its cultivation, that a small pamphlet describing its value and useful qualities may be printed in Sinhalese and Tamil and distributed among the headmen of at least all up-country districts.

The following are a few of the ways in which the fruit can be served:—

1. The young fruit when about an inch in diameter makes a very good pickle either alone or mixed with other pickles.

2. When two-thirds grown they can be sliced in the same way as cucumber and eaten as a salad.

3. The half ripe fruit can be sliced and fried in butter, after the manner of brinjals (garden egg) or half boiled and cut up for salad like beetroot.

4. The matured fruit make a nice dish when stuffed with forced meat like a vegetable marrow.

5. Plain boiled like a vegetable marrow and used up either plain or with white sauce.

6. Made into a variety of curries as pumpkins, cucumber, etc.

7. When boiled and used with lime juce, cloves, etc., makes a capital imitation apple sauce.

8. Mixed with lime juce and sugar it supplies an ingredient for tarts.

9. A preserve can be made from it after the manner of vegetable marrow.

10. The dish which is considered a delicacy in England is made from the seeds which are taken out from the fruit, after being boiled, and fried in butter.

11. Roots boiled resemble yams.

12. Roots can also be roasted or baked like yams.

W. NOCK,
Superintendent, Hakgala Gardens.
February, 1896.

* Now seventeen years old.—27-3-02.

* Now 28 years.—27-3-02.

CO-OPERATIVE CREDIT SOCIETIES.

In a late number of the *Agricultural Magazine* we drew attention to the desirability of devising some system of Agricultural Banks for the cultivators in Ceylon. As one travels through the country it appears evident that in spite of the abolition of the paddy tax the condition of the native cultivator has not improved, and in many places one finds land passing into the hands of the Mohammedan usurer, who, starting with a clean sheet and a natural energy which has been steadily diminishing in the Sinhalese cultivator, are beginning to prove that paddy cultivation is—what it was "once upon a time"—a very paying industry.

Mr. Reg. Murray, writing in the *Banker's Magazine* points out that what is wanted to ameliorate the distressful condition of the Indian (and Ceylon) cultivator, is not momentary support so much as intelligent organization. Credit is already available, but of a kind which leaves the recipients worse off than they were before.

In June last there met at Simla a Committee, composed of experts, appointed to report on what remedial measures can be devised for improving the condition of the Indian ryot. This Committee has already published its report, and it may be confidently expected that Lord Curzon will not allow the proposed legislation to wait long for its practical application.

The object of such legislation is not as is popularly believed, that the Government should establish a kind of credit *mobilier* to pay the outstanding debts of the cultivator and release him from the grasp of the moneylender,—a policy, the defects of which need not be enlarged upon here.

Going to the cause of the trouble we find that the ordinary rate of interest payable by the cultivator is scandalously high, and that in addition the money-lender secures to himself the sale of the crops at a price unfavourable to the borrower, while in many cases the land itself is at his mercy. And this is the chief point, that lending for agricultural purposes has long since reached the state of usury, the effects of which is the gradual effacement of the borrower and his credit and the reduction of himself to an unproductive cypher. Thus has it come about that the industry becomes handicapped and unprogressive, and hence follows the obvious suggestion that no improvement is possible until the cost of borrowing on the part of the cultivator is reduced below the rates charged by the native money-lender.

As a first step something must be done by the borrowers themselves to improve their credit and make them free agents, since in their present condition they have nothing to offer as security. It is not to be expected that under any circumstances they will be able to improve their credit to the extent of clearing their debts, but it is possible for them to improve it to the extent of deriving a profit from the result of their present and future labour and intelligence and with such surplus to gradually pay off old debts. To enable them to do so, it is proposed that Government pass an act and frame special rules for the encouragement and formation of Co-operative Societies on similar lines to those of the Friendly Societies in England and the Raffeisen Societies on the Continent.

The argument is that the united security of a number of men can raise advances on considerably easier terms than one man, who, as things go, is required to pay rates of interest which make it impossible for him to ever reap the just fruits of his labours. Co-operative Credit Societies, therefore, have for their object the banding of individuals together in order to obtain money at reasonable rates of interest and to distribute the money so obtained among the members under fixed rules. The margin of profit between the rate at which the Society borrows for and lends to its members should gradually create a reserve fund, which, being indivisible, must annually improve their credit. The action of Government must be confined to shewing the people how to act and to provide legislation and rules for their guidance and protection, and thus encourage self-help and self-reliance.

Societies already formed in the N.-W. Province and the Punjab show that the Co-operative credit is well understood and appreciated both by borrower and lender. In Madras it is likely that native banks will soon remodel their system in order to obtain the privilege and exemptions which the legislature propose to afford to Co-operative Societies.

With such a system in operation it does not seem likely that Government will be applied to, unless under special circumstances, to make loans for the promotion and support of the Societies, nor beyond the inspection of a Registrar or other District Officer, will the Government direct, regulate or interfere with the free action of the Committees of management. The Raffeisan system has been so eminently successful on the Continent that, with conditions at least equally favourable for its growth, it is reasonable to suppose that it will be equally suitable and successful in India and Ceylon.

With the successful application of the Co-operative banking system to Indian agriculture, it only remains for some one to agitate for its adoption in Ceylon under Government auspices.

BY HIGHWAYS AND HEDGES.

It is surprising to see the enormous extent of land under citronella grass in the Southern Province, and that too, in spite of the big drop in the price of the oil—now procurable for about 60 cents the bottle. There is no doubt that this hardy grass, growing as it does without any special attention, has spoiled the people for better cultivation. In these citronella districts the abortive attempts to grow coconuts, Liberian coffee, cocoa, etc., only go to prove that even if these economic products are suited to the districts, they will not tolerate the kind of treatment that is meted out to them by the careless citronella planter.

The wholesale adulteration of citronella by means of kerosene has been the downfall of the Ceylon trade in the oil. Who could have been the ingenious inventor of the fraud? There is no doubt that many a southern fortune that has come out of it. It is said that after some trouble the chemist found a means of detecting the adulterant and the extent of adulteration; but quite lately we have been informed that the test, which answered hitherto, fails, owing it is thought to another adulterant being employed or a third substance being bought into requisition to effectually disguise the fraud. We have not been able to discover the suspected *tertium quid*, while a new adulternant, if it could take the place of kerosene, would not from a financial point of view answer the purpose of the citronella planter. Domba oil was suspected to be employed, but it would not pay to employ it even if it be a good adulterant. The old method of adulteration consisted in mixing the kerosene with the distilled citronella; now, however, the dodge is to pour the kerosene over the grass when it is ready to be operated on by steam, and distill the vegetable and mineral oils together. Could this change of tactics account for the confusion of the chemists?

Quisqualis indica is not commonly seen outside gardens, but *Alamanda* has long since started on its own account. We were surprised, however, to see *Quisqualis* as a veritable escape from cultivation on the banks of the Nilwala ganga near Atureliya.

There is no doubt that considerable improvement is possibled in the method of curing native tobacco, as an expert lately remarked; but those who smoke the "fragrant jaffna" cigar could little suspect what ingenious devices are practised by the tobacco growers of the North. A late resident in that part of the Island assured us that he once watched a cultivator working round a manure heap which had lately been saturated with rain, and saw him fish up a parcel of leaf from underneath the midden, explaining, on being questioned, that it had been put there to ferment. Who will be surprised at the rankness and pungency of a Jaffna cigar after that?

The tree known as Samadara (*Samadera indica*) found in the Galle district among other places, is interesting from the fact that a decoction made from the leaves has insecticidal properties, and is according to Dr. Trimen destructive to white-ants. The whole plant which is very bitter is used medicinally as a febrifuge.

IDENTIFICATION OF WOODS.

[The following is a *resumé* of a notice in *Nature* (kindly placed at our disposal by Mr. Lewis, Assistant Conservator of Forests), from which it would appear that it is more difficult to identify woods by means of anatomical characters than is generally supposed, on account of the great differences which the structure of the primary and secoudary wood present.—Ed. *A.M.*]

"The grouping of vessels and the medullary rays and the arrangement of the wood parenchyma are frequently so characteristic that various genera can be recognized by a glance at the transverse section, *i.e.*, horizontally as the tree stands; and further it is by no means rare to find the same structure running through a whole genus, or, less frequently, through a whole order. A hundred genera could be cited which exhibit a strong family likeness, and of the Proteaceæ and Sapotaceæ it may be said that the description of the structure of the wood of one species will practically serve for the whole order. On the contrary there are whole orders which appear to consist chiefly of exceptions, as in the case of Celastraceæ, and where it is difficult to find two genera with any important feature in common. The structure of the woody portion of Cryptogams has been employed for years in the study of fossil plants; that of the monocotyledenous trees and conifers is notoriously uniform, and is as sure a guide to their position in the natural system as any external character. Why then should not the same rule apply to the angiospermous dicotyledons, and for what reason should the thread be lost as soon as we pass from one division of the vegetable world to another?

It seems a by-no-means extravagant idea that inasmuch as it is quite indifferent to the welfare of a plant what the structure of its woody portion may be, so long as it performs the mechanical duties imposed upon it, ancestral traits should be preserved undisturbed in the wood more than in any other part.

Ignoring the debatable question, there is no doubt whatever of the ecconomic importance of this study.

Mr. Stone points out that with the large number of timbers in use and those destined to be turned useful, the old rule of thumb methods of identification are not likely to answer. He refers to the case of the Colonies where those who have a knowledge of timbers are few in number, and vernacular names of trees often confusing.

Mr. Stone points out that for practical purposes it is rarely necessary to use high powers of magnification: a pocket lens of a two-inch objective being frequently sufficient to display the special character of the structure. Higher powers tend to obliterate this "individuality" which depends on the arrangement or complex of the elements. For instance, the radial or tree-like arrangement of the vessels in the wood of *Quercus* is recognizable by the naked eye, but is not striking under a half inch objective. The concentric undulating lines of vessels characteristic of the elms is also usually visible to the naked eye. But in both these cases the same characteristics are shared by many other genera often not by any means closely related.

It will therefore be at once admitted that anything like a natural system of classification of wood by their structure is quite impossible at present. There is too little recorded information and too many glaring exceptions where one would not expect to see exceptions.

Mr. Stone refers to the systems of well-known authorities as being but partially successful, and suggests the medullary rays as the most constant feature for forming the basis of an artificial key, though it does not altogether coincide with botanical classification.

"Nevertheless," says Mr. Stone, "a useful key may be constructed by first distinguishing those woods with two kinds of rays from those having but one. The latter then fall again into two groups, one having rays with intervals between them of not less than the transverse diameter of the largest pores present, the other converse by having the intervals never greater than the pore diameter, *i.e.*, the rays diverge and run round or avoid the pores.

These two types of rays are very clearly marked and have quite different aspects. The arrangement of the vessels or pores can then be usefully employed, as the concentric, radial, tree-like, or undulating group, or uniform distribution of the pores is very constant in many genera, as are also the equally varied forms assumed by the soft tissue (wood parenchyma), which comes next in order of importance. It would be out of place here to go into further detail, and it need only be pointed out that by following this sequence all members of the same genus except the aberrant forms fall together into the same ultimate groups.

But the structure of many groups, and even whole genera are so similar that the species can only be distinguished by long acquaintance, and it is then necessary to note specific gravity, colour, smell, taste, hardness, behaviour with re-agents, &c. Frequently one pronounced feature, *e.g.*, smell or hardness suffices for identification of a species. But then there are hundreds of species that have no such pronounced feature, and hence the crying need for a guide to enable one to trace the name of any wood. Here is an excellent field for local foresters, for there can be no two opinions as to the economic importance of this study.

NATURE STUDY AND SCHOOL GARDENING.

Progress in this new movement is not confined to America (where it had its origin) or Australia, for we read in *Nature* that considerable attention is being paid to it in England.

A periodical called the *Nature Study Journal* has been started in Kent, under the auspices of a society for promoting Nature Study, the members of which are expected to contribute suitable lessons for teaching purposes. Sir W. Hart Dyke writes an introduction to the first number issued. *Nature* referring to the new movement says, that the introduction of Nature Study into rural schools cannot but be productive of good, and though it is not primarily directed to keeping children on the land, it will have this effect indirectly by leading them to see that a country life has its own interests and is not merely stupid routine; remarking further that the children who do stay in the country will through Nature Study lay a foundation of thinking about rural pursuits which can be built upon later.

We also read of a Conference on School Gardens being held, when Mr Rooper, Inspector of Schools, read a paper on School Gardening in England and Germany, in the course of which he is reported to have said that English School Gardens though few are the more practical, when these gardens are considered as fields for mental and manual training. Sir John Cockburn, late Premier and Minister of Education in South Australia referred to a difficulty which we have experienced ourselves, viz., the want of time for work; but he observed that in South Australia the authorities had gone so far to overcome it, that, while originally one hour was allowed for school gardening, at present only *half* the teaching hours was devoted to theoretical instruction.

Lastly, we read of an influential Committee being appointed to promote a Nature Study Exhibition to be held in London, about the end of July next. At this exhibition urban and rural elementary day schools and other institutions will compete for prizes and certificates, which will be offered for collections of Natural objects (plants, insects, etc.), drawings of same, plans for gardens, plants grown in boxes, pots, etc. While the efforts of individual pupils will be recognised, it is intended by means of a competition to judge of the best scheme for instruction and working methods. It is expected that there will be no difficulty in getting the necessary funds for what *Nature* calls "such an excellent object."

We, in Ceylon, have been losing no time in availing ourselves of the advantage of the new movement, for since June last a local School Garden scheme has been in operation, and so far has been carried on with satisfactory results. As reported elsewhere, already a small exhibition has been the outcome of the activity engendered by the scheme. As regards the gardens themselves, a competent authority, who has been inspecting the first-started gardens which have had some little time for developing, has declared to us that, making allowance for altered conditions, he is inclined to think our School Gardens compare favourably with, and if anything, are superior to, similar gardens in England. This is indeed high praise, and it is to be hoped it will only urge on our teachers to higher efforts.

VEGETABLES, HOW TO COOK AND SERVE THEM.

(*Concluded.*)

Spinach, though, of course, a green vegetable, requires somewhat different management. It reduces very much in the process of cooking, so a good quantity—not less than 2 or 3 lbs.—must be allowed for a good sized dish. Wash it in three waters, as it is very gritty, pick off all the coarse stalks, and leave it in cold water for ½ hour to freshen it up. A large saucepan will be required; into this place the spinach, without any water, except what clings to the leaves, for it will cook in its own juice. Sprinkle a tablespoonful of salt over, and cover the saucepan for a minute or two to keep in the steam. After the juice begins to draw it must be very frequently stirred with a

large wooden spoon, and as soon as tender (which, if young, it will be in 10 minutes), it must be drained and squeezed very dry between two plates. Some people will eat it in this state; but the French method is to chop it finely, or even pass it through a sieve, to mix in 1 oz. of butter, pepper and salt, and to return it to the saucepan to make hot. It is then served in a mound in the vegetable dish on toast, with a few rings of hard-boiled egg, or *croutons* of fried bread as a garnish. If served as a separate dish, either for supper or any other meal, poached eggs are the usual accompaniment, and the spinach is placed on slices of buttered toast. In the country, where they can be picked by the roadside, spring nettles make a very nice and wholesome dish of greens, and may be cooked in the same manner as spinach.

Asparagus should be dressed as soon as possible after it is cut. If necessary to keep it, the stalks are better placed in cold water, like flowers, in a vase. Scrape the white parts of the stems, beginning from the head downwards, and cut off the very hardest part. Throw them into cold water as they are done, and tie them into bundles of about 15 or 20, according to the thickness, with string, cutting them all the same length. Have a saucepan ready with fast-boiling water, salted with 1 tablespoonful of salt to ½ gallon of water, with a lump of sugar; this latter will help to soften the water, and make the asparagus boil tender—soda, of course, must never be used for them. Set the bundles of asparagus upright on their stalks in the water, with the heads just out of the water, as these will cook in the steam, and if quite covered would be done long before the stalks, and possibly drop off. Boil quickly, with saucepan uncovered; they will take from 15 to 18 minutes after the water boils again. When done, take them up carefully, remove the string, and dish them upon a piece of toast which has been dipped in the water the asparagus was cooked in. The white ends should be laid outwards each way, the points or heads meeting in the middle. Special tongs are sold for helping this vegetable. A tureen of melted butter should accompany them to table, and a little may be poured over them in the dish. A good sauce *blanche*, or melted butter, to serve with any vegetable which requires it, is made as follows: Melt 1 oz. butter in a small saucepan, stir into it ½ oz. of flour and a pinch of salt, and add ½ pint of milk; let it boil and thicken, stirring all the time; boil a minute, then serve. A richer sauce *blanche* is to mix one tablespoonful of flour into a smooth batter with a gill of water, or rather less, then to put it in the saucepan with ¼ lb. of butter, a pinch of salt, a very little grated nutmeg, and a small teaspoonful of white vinegar or lemon juice. When it thickens it is done. This is a French recipe, and very delicious.

Artichokes are considered better for having been gathered a day or two, and in this respect are unlike any other vegetable. They should be well washed and soaked before cooking; the stems should be removed, and the leaves trimmed away at the bottom. They are cooked like asparagus, and will take 20 or 25 minutes after the water boils again; five or six are sufficient for a dish. Some cooks use a very little soda in the water, in addition to the sugar as recommended for asparagus. The artichokes should be placed in the saucepan head downward, and when the leaves draw out easily they are done. Dutch sauce or melted butter is served with them, and the leaves are pulled out with the fingers and dipped in the sauce. Dutch sauce is made by thickening some plain melted butter, like the first recipe given, only using water instead of milk, with the yolks of eggs. It is merely stirred over the fire, and not allowed to boil, or it would curdle.

Jerusalem artichokes are quite a different vegetable; they are the root of a plant, instead of the flower, and are cooked like old potatoes. The only thing to be careful about is to keep them white, and this may be done by laying them in fresh cold water after peeling, until they are required to be cooked. They will take about the same time as potatoes, and are served with melted butter made with milk as in first recipe. Occasionally they are mashed like turnips, but I do not think they are so nice as when whole.

Sea-kale is a delicate vegetable, in flavour very much like asparagus, and cooked in exactly the same manner; that is, it is trimmed, tied into bundles, and placed in boiling salted water, with some sugar; time to cook, 15 or 20 minutes; serve with melted butter poured over it in a dish.

Green peas, to be eaten in perfection, should neither be gathered nor shelled long before they are to be dressed. If obliged to be shelled overnight, the best plan to keep them fresh is to place the colander which contains them over a basin of cold water, and to completely cover them with the shells. Wash them by letting the tap run through the colander, throw them into boiling water, prepared as for asparagus, but slightly increasing the quantity of sugar. If the peas are old ½ teaspoonful carbonate of soda must be added to the water, but if too much be used the peas will have a broken appearance. A sprig or two of mint should be boiled with them to give a good flavour: this is removed before serving. Young early peas will take 10 or 15 minutes to cook; larger and later kinds, such as marrowfats, 20 or 25 minutes, while old peas must be allowed ½ hour, or even longer. When cooked, drain from the water in a colander, turn into the vegetable dish, with a good piece of butter, a little pepper and salt.

Carrots, parsnips, and turnips must never have soda in the water in which they are boiled, as it would turn them a very bad colour. A little fat may be substituted for softening the water and making them boil tender; and it is for this reason they are so frequently cooked with meat. Young summer carrots should only be washed; then when they are cooked their skins should be rubbed off with a coarse cloth; they are usually served quite plain, but may be covered with melted butter if preferred; they will take 25 minutes to boil. Old carrots, on the contrary, should be scraped, not peeled, and the longer they are boiled the better; two hours certainly is not too long a time. If boiled with beef, put them in as soon as the meat boils again after going in the water. If boiled separately, salt the water, and add a good

ounce of dripping to ½ gallon of water. If very large, cut them in half, but it is better to cook them whole, if there is time, as the flavour will be superior. Turnips are hardly a summer vegetable, and they are generally served mashed; they require peeling thickly, as their skins are very woody; boil with meat if possible; if not, use a little dripping in the water. Make them as dry as you can before mashing, then mash with a fork; mix with a small bit of butter and a little milk, return to the saucepan, and stir over the fire until all the milk has dried up. The use of cream instead of milk makes them very delicious; they are served piled high in a hot vegetable dish, with a strainer at bottom, as, even with the utmost care, there will almost sure to be a little moisture to drain away.

Parsnips are also a winter vegetable; they are peeled and cut in slices across, and boiled in the same manner as carrots and turnips, and will take from 1 hour to 1½ hours to cook; generally served plain in the vegetable dish, or round the meat. Sometimes, however, they are mashed like turnips, with a little butter and milk.

Vegetable marrow is a late summer and autumn vegetable, and suitable also for any kind of hot meat. Peel it, and cut in thick slices across with a sharp knife; remove the seeds from each slice, so as to form rings; boil these in salted water for 20 minutes, drain in a colander, and serve in a vegetable dish upon toast. Moisten the toast in the vegetable marrow water, and pour thick melted butter over all.

Tomatoes are frequently eaten raw, or prepared as a salad; if cooked, they are best baked. Simply lay them in a tin with a small bit of butter on top of each, and bake till tender (about ¼ hour). Serve with the juice poured round. They may also be cut in slices and fried, and are good done in this way with chops, steaks, and broiled bacon.

GENERAL ITEMS.

The use of trap lanterns, for trapping insect pests in the garden, would seem to be of questionable benefit, to judge from results obtained at the Ontario Agricultural College. Of the insects captured during three months, a large percentage was found to be decidedly beneficial insects. "If," says the reporter, "all the traps were in operation for four months, probably forty millions of decidedly beneficial insects were captured and destroyed."

Mr. J. D. Ormbsy, of Lime Hall, St. Ann, writes to the *Journal of the Jamaica Agricultural Society*: "I think I have found out an insecticide for spraying plants which is superior to the kerosene emulsion. Hitherto, I have used the Hubbard's formula of kerosene emulsion, but I find if I am ever so careful with it, it burns the young leaves and tendrils, unless it is so much diluted as not to affect the insects. Knowing how averse all insects are to castor oil, I thought I would try an emulsion of it. I tried the soap—boiling water and oil as in the Hubbard's formula, but it would not emulsify, then the thought struck me to add carbonate of soda, and it is quite a success. My formula is—one quart of castor oil, 1 lb. hard soap, ¼ lb. carbonate soda, 1 gallon water—boil soap and soda in the water and when melted and boiling hot stir in the castor oil. You can dilute in 10 or 20 parts of water for spraying, and you can take a brush and paint the stalks of plants the ants or other insects are troubling without diluting—no insect will face it, and it does not burn the young leaves or sprouts. I shall be glad if this is found useful to the public at large."

A heavy application of paint is recommended by those who have had experience in the matter, as the best dressing for pruning wounds.

The following reply by Mr. J. H. Maiden, Government Botanist, N. S. W., to a correspondent is no doubt correct enough for that Colony, but it sounds strange enough to us who are familiar with hundreds of thousands of acres of tea: The tea plant is closely allied to the camellia, and requires somewhat similar treatment. The plants must be well watered and kept steadily growing. The tea plant likes good deep soil, and, in my experience, it does best where it can get a touch of the frost.

An American Correspondent, quoted by the *N. S. W. Agricultural Gazette*, recommends a cure-all remedy for sick pigs, whether they suffer from rheumatism, paralysis, scour or what-not. This is a mixture of fresh new milk and turpentine. Grade the dose from a teaspoonful of turpentine for a six week's old pig to a table spoonful or more for a mature hog. The milk may be given *ad lib.* The remedy is said to be the best known for all the ills that pigs are heir to, and when anything is wrong should be resorted to at once.

We read of what is spoken of as a "new variety of fowls," the Ancona, considered the best laying breed of any. An Exchange refers to the experience of a lady who has had hens laying for two years beginning when five months old. They are non-sitters, and in shape and general appearance resemble the Leghorn but in colour the Houdan.

Still another way of preserving eggs is to take them quite fresh, clean thoroughly with a damp cloth, rub dry, rub a few drops of boiled Linseed oil turned into the palm of the hand, and lay on a shelf protected from dust. Too much or too little oil should not be used. About the third day a fine skin, which hermetically seals the eggs, forms over them.

The *Jamaica Agricultural Journal* recommends clean wood ashes as the best condition powder for horses. It may be given twice a week in the feed, at the rate of an even tea spoon each time